THE OIL WEEKLY

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The Oil Man's Calendar

APR. 26-28	Western Petroleum Refiners Association, Hot Springs, Arkansas.
MAY 6-7	American Petroleum Institute, Division of Production, Eastern District, Columbus, Ohio.
10-16	American Gas Association, Natural Gas Department, Kansas City, Missouri.
19-21	Natural Gasoline Association of America, Tulsa, Oklahoma.
23-27	National Association of Purchasing Agents (Oil Company Buyers Group), Pittsburgh, Pa.
JUNE 1-3	American Petroleum Institute, Mid-Year Meeting, Colorado Springs, Colorado.
10-12	Pennsylvania Grade Crude Oil Association, Sailing from Buffalo, New York.
11	Interstate Oil Compact Commission, Santa Fe, New Mexico.
14-19	Second World Congress of Petroleum, Paris, France.
20-26	Golden Celebration of Oil and Gas, Findlay, Ohio.
25-27	National Oil Scouts Association, Dallas, Texas.
JULY	Seventeenth International Geological Congress, Moscow, U.S.S.R.
SEPT. 15-17	National Petroleum Association, Hotel Traymore, Atlantic City, New Jersey.
SEPT. 27 OCT. 1	American Gas Association, Cleveland, Ohio.
OCT. 11-16	Oil World Exposition, Houston, Texas.
14-16	Independent Petroleum Association of America, Houston, Texas.
29-30	Mid-Continent Oil and Gas Association, Texas Division, Dallas, Texas.
NOV. 9-12	American Petroleum Institute, (Annual), Chicago, Illinois.

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LOOKING AHEAD
WITH THE EDITOR

A special issue next week on Western Kansas, one of the most rapidly developing oil areas in the world.

SELDOM have we been so "pepped up" over an issue as we are of our next one, which is to feature Western Kansas. During the past two years, development work in this region has increased steadily, and at present is at its all-time peak. Likewise, production has risen to a record level. It appears that 1937 will eclipse previous marks.

Basic Facts:

Probably more exploratory work is being done in Western Kansas than in any other region. Approximately 3½ million acres were seismographed last year, and a million acres were core drilled. Then, there was a great deal of subsurface and surface geology work.

There are 155 fields producing in Western Kansas, of which 87 were discovered during 1935 and 1936. In the latter year, it led all districts in the nation in number of new pools. There are 45 fields in the district with but 1 well drilled to date, 14 have but 2 wells, 8 have but 3 wells, and several others have 4, 5 or 6 wells.

Lack of pipe line outlets has retarded drilling operations in many fields, but these facilities are expected to be provided soon, and drilling work will increase greatly.

More than 5,800,000 acres of undeveloped leases are held by major companies.

Western Kansas has come quietly to the foreground, and has been largely neglected. What better editorial basis could there be for a special issue than the facts set out above? It is an editorial natural!

Editorial Features:

Briefly, the editorial contents will consist of a number of special articles, complete detailed information on each field, and an unusual insert map.

The articles will discuss such important subjects as reserves, including both oil and gas, history of development, recent drilling results, exploratory work, and other topics of importance and interest.

Complete information on every producing field will be presented. This will include the following data: Location; discovery well; producing depth; geological producing formation; cumulative production; pipe line outlets; gravity of oil; number of wells, etc.

A most unusual insert map will be published in seven colors. Never before has a trade journal undertaken such an oil field presentation. It will show the location of every field in the state, and by the various colors designate its producing formation.

THIS WEEK

» ATLANTIC REFINING COMPANY'S new $5,000,000 refinery at Atreco, near Port Arthur, Texas, is scheduled to start operating in the very near future. The airplane view to the right, shows storage and settling tanks at left, the cooling unit, cracking and stabilization units, polymerization units and the power house. At the rear may be seen offices and warehouses. Superintendent of the 30,000-barrel plant is M. J. Welsh, formerly at the company's now abandoned refinery at Brunswick, Ga.

A DAILY average crude production of 3,332,900 barrels will be required during May to meet consumer demand, in the opinion of the U. S. Bureau of Mines. The estimate is 89,900 barrels higher than in April, and 309,100 barrels higher than a year ago. The largest increase suggested by the Bureau was for Texas, which was increased 42,900 barrels per day. **Page 10.**

ALLOWABLE production for Texas during May has been fixed at 1,411,236 barrels per day by the Texas Railroad Commission. This is 13,120 barrels higher than the allowable in effect on April 19, and is 62,272 barrels greater than on April 1. The Bureau of Mines had recommended Texas produce 1,340,800 barrels per day. Earlier in the week, purchasers had filed a number of requests for increases at the statewide hearing, and several of these were granted. **Page 10.**

THIS Opelika strike starts a new period for the East Texas basin, as the well proves that a structure that failed to pay off on the Woodbine can yield the jackpot in the lower Glen Rose, or equivalent of the Rodessa pay horizon. Tide Water operates the Opelika project, and is in a tough spot with the drill pipe stuck, and only 1700 feet of pipe in the hole. They will likely wind up by cementing the drill pipe in place, and completing it without an oil string. Naturally a new wave of excitement has swept the East Texas Woodbine belt. **Page 80.**

A DISTRICT court judge last week held that concerns operating in Louisiana cannot deduct two percent for wastage and evaporation from their severance taxes, and that purchasing firms are responsible for the payment of the tax on oil bought. The ruling has been appealed to the state supreme court. The state is seeking judgment against several companies for amounts alleged due because of past deductions. **Page 12.**

CURRENT SITUATION

Outlook. — Continues favorable; markets are firm.

Crude Market.—Talk of higher prices persists.

Refined Oil Markets. — Steady; prices on upward trend.

Crude Production.—Up 55,425 barrels to new all-time peak.

Crude Runs to Stills.—Up 50,000 barrels to 3,055,000 daily in week ended April 17.

Crude Stocks.—Up 94,000 barrels in week ended April 10; gain of 12,257,000 in 11 weeks.

Gasoline Stocks. — Up 124,000 barrels in week ended April 17, to 82,703,000 barrels.

Gas and Fuel Oil Stocks.—Down 109,000 barrels in week ended April 17, to 94,472,000 barrels.

Drilling.—Completions up 57 last week; total 591 wells.

See **MARKET SECTION** *for Details*

THE government's suit in which 26 major companies and 71 executives are charged with conspiracy to artificially raise the price of gasoline is scheduled to open September 27 at Madison. This is a postponement from June, as originally planned. Defense witnesses last week were also released from their oath of secrecy, which means that they will be able to consult with attorneys preparing the defensive side. **Page 12.**

DESPITE early indications that high pressures and excessive gas/oil ratios would present operating problems, the Van Vleck field of Texas is being developed efficiently because of constructive practices, which include a novel well completion program, improved production methods, and low treating costs. Twenty-one wells have been completed at various levels between 7000 and 8000 feet, but gas/oil ratio is held to such a low figure none of it is being wasted. **Page 19.**

WHERE is the new oil to meet future demand coming from, and how much of it is there? In attempting to answer this question, Dorsey Hager uses the ratio of producing acreage to the prospective acres. This "density factor" indicates that the United States surely can expect as much oil to be discovered in the future as has been in the past 77 years, and that with improved producing technique this volume may be increased materially. **Page 16.**

WHAT is the relationship between geology and geophysics? This is a question that is causing considerable comment among the two professions, and in this issue the side of the geologists is presented. **Page 42.**

Boosts Allowable

INCREASE OF 89,900 BARRELS FOR MAY IS RECOMMENDED

Washington, D. C.—With actual production for the week ending April 10 averaging 3,445,000 barrels a day, the Bureau of Mines on April 21 placed the output of crude oil required in May to meet demand at 3,332,900 barrels daily, or 89,900 barrels higher than the estimate for the current month and 309,100 barrels above the actual May, 1936, average.

As has been the case for a considerable period, the output for the week ended April 10 attained a new high record, although runs to stills remained unchanged.

Demand Up 13 Percent

Domestic demand for motor fuel during the coming month was estimated by the bureau at 47,650,000 barrels, which, it was pointed out, while 13 percent above the "actual" demand in May of last year, is only 9 percent higher than a normal figure for that month. Exports of motor fuel are estimated at 2,800,000 barrels, a 300,000-barrel increase over the figure for the current month.

The bureau figures on a reduction of 2,700,000 barrels in gasoline stocks during the coming month, compared with an actual decrease of 1,904,000 barrels in May, 1936. "Stocks of finished and unfinished gasoline," it was commented, "amounted to 78,413,000 barrels on February 28, an increase of nearly 7,000,000 barrels over the stocks on January 31. According to the American Petroleum Institute, stocks were further increased during March by about 4,400,000 barrels, making them approximately 83,000,000 barrels as of March 31. This is about 8,000,000 barrels above the corresponding total for 1936, but it is expected that the increased consumption will reduce these stocks at a faster rate than last year."

Benzol and direct sales and losses of natural gasoline have been estimated at 900,000 barrels, making the required production of gasoline 46,850,000 barrels, recommended by the bureau to be distributed among the several districts as follows: East Coast 7,010,000 barrels; Appalachian 1,710,000 barrels; Indiana-Illinois 8,120,000 barrels; Oklahoma 3,170,000 barrels; inland Texas 3,840,000 barrels; Kansas 2,860,000 barrels; Gulf Texas 10,130,000 barrels; Gulf Louisiana 1,170,000 barrels; inland Louisiana-Arkansas 980,000 barrels; Rocky Mountain 1,130,000 barrels; California 6,190,000 barrels.

Natural-gasoline consumption at refineries during the coming month is placed at 5 percent of total requirements, or 2,340,000 barrels. The yield of straight-run and cracked gasoline is estimated at 45.1 percent, an increase of 0.8 percent over the April estimate, and application of this yield to the estimated straight-run and cracked production of 44,510,000 barrels gives 98,620,000 barrels as the crude required at refineries.

Runs of foreign crude are estimated at 2,900,000 barrels, an increase of 100,000 barrels over April; exports are placed at 4,500,000 barrels, and fuel and losses at 3,100,000 barrels.

The total demand for domestic crude for the coming month, accordingly, will be 103,320,000 barrels; no reduction of stocks is anticipated, and the daily average, therefore, will be 3,332,900 barrels, compared with 3,243,000 barrels forecast for April.

Bureau of Mines Recommended Production by States

STATE—	April	May
Texas	1,297,900	1,340,800
Oklahoma	609,600	622,700
California	579,900	583,300
Louisiana	244,800	249,400
Kansas	183,000	187,100
New Mexico	91,400	99,800
Pennsylvania	49,800	52,000
Wyoming	244,000	49,000
Michigan	30,600	34,900
Arkansas	27,400	28,500
Kentucky	15,600	14,800
Montana	14,600	15,200
New York	14,000	14,500
Illinois	12,800	12,500
West Virginia	10,500	10,500
Ohio	10,200	10,300
Colorado	4,800	4,800
Indiana	2,100	2,200
Total	3,243,000	3,332,900

Increase Granted

TEXAS MAY ALLOWABLE SET AT 1,411,236 BARRELS DAY

Austin.—The Texas Railroad Commission has issued its statewide proration order effective May 1, fixing a total allowable of 1,411,236 barrels daily. The new allowable is an increase of 13,120 barrels over the allowable in effect on April 19. It is 62,272 barrels above the allowance fixed by the order which was effective on April 1.

Commission officials pointed out that Texas usually produced from two to three percent less than the allowable fixed by the Railroad Commission, and that for this reason, the new allowable would be approximately the same as the recommendation by the Bureau of Mines which was 1,340,800 barrels daily for May. They explained further that when the April 1 order was issued, storage in the United States was increasing at the rate of 300,000 barrels weekly and that it has declined now to 70,000 barrels a week. They felt that this increase in storage would be offset largely by increased consumption during the former months.

Van Gets Increase

The commission increased the allowable for the Van field 1200 barrels daily in response to a request from Pure Oil Company. It had been increased 3000 barrels on April 11.

An increase of 8000 barrels was ordered for the Texas Panhandle where operators testified storage withdrawals had averaged 11,000 barrels daily for the past 15 months.

There were small increases granted to Cayuga, Fuhrman, Harper, Tom O'Connor, Guerra, and the 4400-foot sand at Greta.

The East Texas field was allowed to continue to produce 2.32 percent of the hourly potential, leaving in effect the factor which has been ordered since last September.

In an accompanying table comparative allowables for each district are set out.

The new field allowables, with the changes, included:

West Central Texas: Jack, south half, 8545, up 1314; Jones, 5881, up 180; Shackelford, 7832, up 101; Upton (McCamey), 11,575, up 700; Young, south half, 5900, up 204.

West Texas: Crane-Cowden 2132, up 292; Eaves 180, down 120; Emperor 1431, up 133; Estes 8873, up 1051, Foster 1445, up 216; Fuhrmans 1114, up 236; Goldsmith 5495, up 1378; Gulf-McElroy 4254, up 227; Howard-Glasscock 16,815, up 249; Iatan-East Howard 7336, up 293; Kermit 19,664, up 1747; Keystone 3208, up 334; Means 2500, up 221; Penwell 6122, up 115; Sand Hills 1113, up 200; Ward, North 9265, up 415; Ward, South 16,714, up 396.

East Central Texas: Cayuga 7822, up 540; Rodessa 40,583, up 2129; Sulphur Bluff 3909, up 1159; Talco 22,273, up 3104; Trinity 1180, up 238; Van 36,881, up 4200.

Southwest Texas

Southwest Texas: Callahan 384, up 134; Clark 446, up 150; Darst Creek 7070, up 105; Luling-Branyon 8111, up 873; Greta 13,576, up 920; Heyser 3069, up 569; Keeran 620, up 272; McMurray 150 (new field); Placedo 7555, up 567; Tom O'Connor 11,725, up 2068; Slick 114 (new field); Aransas 1068, up 178; Chapman Ranch 200 (new field); Charamousca 409, up 324; Clara Driscoll 1111, up 103; Colmena 484, up 160; Corpus Christi 9636, up 386; Elpanque 125 (new field); Flour Bluff 3471, up 712; Kohler, deep 125 (new field); La Blanca 165 (new field); Loma Novia 16,963, up 318; Lopez 8200, up 325; O'Hearn 5110, up 350; Plymouth 13,280, up 1400; Premont Prospect 1307, up 739; Samfordyce 6034, up 189; Seven Sisters 9534, up 200; Saxet, old 2230, up 155; Saxet, shallow 10,808, up 758; Saxet, Frio 15,708, up 2772; Taft 3732, up 576.

Gulf Coast: Amelia 1659, up 474; Anahuac 13,449, up 609; Boling 1421, up 318; Batson, new 1002, up 199; Barbers Hill 12,409, up 209; Conroe 43,917, up 101; Cotton Lake, South 200 (new field); Dickinson 2510, up 393; Goose Creek 3021, up 366; Hamman 175 (new field);

Hastings 13,135, up 1042; Hull, new 2946, up 303; Humble 3512, up 167; Lockridge 449, up 180; Markham 1802, up 100; Nome 1241, up 129; Old Ocean 983, up 477; Junction 4793, up 627; Raccoon Bend 2653, up 150; Segno 37, up 231; Silsbee 880, up 110; South Houston 5950, up 160; Spindletop 2692, up 236; Thompson 13,028, down 144; Tomball 8705, up 246; Withers 1395, up 145.

Operators Seek Increases

At the regular monthly statewide proration meeting, held earlier in the week (April 20), numerous requests for allowable increases were filed with the Texas Railroad Commission. Most of these requests came from fields in West Texas and Southwest Texas; and in most instances consisted of efforts to obtain restoration of allowables in effect during the month of March.

Evidence presented at the hearing indicated the total Texas allowable was 1,398,116 barrels on April 19, an increase of 49,152 barrels above the allowable set by the commission on April 1. During this 19-day period, a total of 639 new wells had been completed.

Purchasers of Texas crude had filed with the commission nominations indicating their desire to buy 1,631,837 barrels of oil daily, which was 4182 barrels less than they nominated during April. For the month of May, the Bureau of Mines recommended that Texas produce 1,340,800 barrels daily, an increase of 42,900 barrels over the amount suggested for April.

Reports have reached the commission frequently from various fields to the effect that allowables were not produced entirely from the individual well, but in many instances were produced in part from other wells on the same lease. At the hearing last week, the commission moved to eliminate this practice through a new report to be placed on the back of the E-B Form, the monthly producers' report now required, which would constitute a "daily well status report."

This form will provide space for a daily report on the status of each well producing on each lease, and the commission will be able to determine whether it produced during every day

[*Continued on page 58*]

Postpone Trial

OPEN "CONSPIRACY" CASE SEPTEMBER 27 AT MADISON

Madison, Wis.—Federal Judge Patrick T. Stone set September 27 as opening trial date in the government's "oil conspiracy" case Tuesday as he prepared to hear closing arguments on defense motions.

Twenty-six major oil companies, 71 of their high executives, and 3 trade journals are charged in two sets of indictments with illegal operation of buying pools in the East Texas and Mid-Continent fields through which retail prices of gasoline allegedly were artificially raised and an attempt made to "squeeze out" independent jobbers.

Colonel William J. (Wild Bill) Donovan, New York, chief defense counsel, told Judge Stone that the defense had "seriously and earnestly endeavored" to prepare for trial by June 1, as had been previously agreed between defense and government counsel, but that they were unable to do so. The oath of secrecy which witnesses before the grand iuries had taken made it difficult for defense attorneys to prepare their case, he explained.

Defense Witnesses Released

Judge Stone Thursday released defense witnesses from this oath. His ruling was a concession to defense forces, who now will be able to consult with witnesses, for the most part employes of defendant companies, in preparing for trial.

H. H. Thomas, Madison, associate defense counsel, told the court Madison's acute housing shortage was another reason for delay to the September date.

"There are a large number of witnesses and defendants who will have to be here," Thomas said. "Because of tourists, there would be a definite housing shortage in the summer, and we don't want to set an early date and then have to upset all the arrangements by postponing it later. The Madison and Wisconsin Foundation is working on the housing question for this trial now."

Between 500 and 700 people will be brought to Madison for the trial, which is expected to last from three to six months, defense attorneys said. Executives among the defendants will have to set up their own offices and conduct their business by remote control. They are planning to bring some of their own office forces, as well as the witnesses that the defense and government will call.

Date a Compromise One

The September trial date was chosen as a compromise, defense attorneys requesting early October and government attorneys asking early September. Trial will open on an indictment issued last July 28, which charges 24 major oil companies, 3 trade journals and 56 individuals with conspiracy to fix and maintain artificially high prices of gasoline to independent jobbers. A subsequent indictment, involving 23 companies and 46 individuals, many of whom are also charged in the July 28 indictment, is to be tried later. Actual date is dependent upon completion of trial of the first indictment.

Principal arguments before the court last week centered on defense motions seeking bills of particulars listing "names, dates and places" in connection with the indictments. Lengthy arguments, punctuated by clashes between defense and government attorneys, were frequently interrupted by Judge Stone with requests that counsel "get to the point."

Harry F. "Pickwick" Payer, attorney from Cleveland representing the National Petroleum News and Platt's Oilgram, charged government attorneys' arguments to be "Nebula, nebularum—cloud of clouds—how the mists do gather to envelop saint and sinner alike!" He seeks a special bill of particulars for his defendants, who are charged with having published prices paid by oil companies in the spot market through the two pools as the basis on which they "raised and fixed" prices for the entire industry.

Payer declared the indictment should state specific days on which spurious quotations allegedly were published. Otherwise, he maintained, it would be necessary to trace at least 100,000 transactions involved in the publishing of more than 20,000 different quotations in preparing a defense.

"It seems to me that your clients have much less reason than some of the other defendants to demand a bill of particulars," Judge Stone said. "It's really a very simple question of whether you did or did not publish these market prices knowingly and willfully."

The court asked him to file a brief setting forth the specific information he desired, whereupon Payer cut short

[*Continued on page 54*]

State Allowable Order, Effective May 1, 1937

(In Barrels Daily)

DISTRICT	Allowable Effective March 1	Allowable Effective April 1	Allowable per Order Effective May 1
East Texas	453,000	455,500	459,300
Panhandle	75,610	72,150	81,288
Moore County	1,500	1,350	1,386
Osborne Area	725	700	700
North Texas	65,750	64,922	65,963
Foard County	650	565	565
West Central Texas	64,428	62,891	65,350
West Texas	188,463	178,947	187,915
East Central Texas	74,479	70,202	79,570
Rodessa	39,400	38,454	40,583
Southwest Texas	227,486	209,430	226,862
Gulf Coast	207,023	193,853	201,754
Total	1,398,514	1,348,964	1,411,236

Union Drive

TWO LABOR ORGANIZATIONS CONTINUE OIL CAMPAIGNS

Houston.—The Committee for Industrial Organization, headed by John L. Lewis, last week continued its work in organizing workers in the oil country.

Adolph Germer, representative of Lewis, told a gathering at Beaumont, Texas, that the C. I. O. has made a substantial increase in membership since it started its campaign in the oil districts recently.

The Fort Worth, Texas, local of the International Association of Oil Field, Gas Well and Refinery Workers (affiliated with the C. I. O.) extended its activities into surrounding territory and enrolled some new members.

No C.I.O-A.F.L. Strife in Wyoming

At Parco, Wyoming, organization work proceeded, following the launching of a drive for membership by Harvey C. Fremming, president of the International Association of Oil Field, Gas Well and Refinery Workers. In Wyoming it was stated that there will be no withdrawal of the C.I.O.-sponsored oil workers union from tne State Federation of Labor of Wyoming, the unit of the American Federation of Labor there, until orders are received from the C.I.O. or A. F. of L. headquarters. The A. F. of L. state organization meanwhile was giving its support to the C.I.O. drive for membership.

That was in contrast with conditions in Texas, where the A. F. of L. state organization was actively rivaling the C.I.O. in enrolling members.

Organizing in Oklahoma

The organization work of the C.I.O. meanwhile was in progress also in Oklahoma, North Louisiana, East Texas and other districts where oil is produced or refined.

In Oklahoma the A. F. of L. was endeavoring to tie oil workers into its organization, following similar efforts launched the week before in the Houston area. It was stated that some oil companies were encouraging affiliation of their workers with the A. F. of L., apparently in the hope of preventing similar affiliations with C. I. O.

Following the decision of the United States Supreme Court, upholding the Wagner labor relations act, the oil companies apparently have become resigned to seeing their employees enrolled in some oil unions. Presumably, they would rather deal with the A. F. of L. than the C.I.O., in view of the more conservative policies of the former.

At Houston, a charge of violating the Wagner act was preferred against an independent oil company by a former employee, who claimed he had been discharged because of oil union activities. He wired an affidavit to that effect to the regional director of the National Labor Relations Board at Fort Worth.

Less Friction Among Labor Groups

The friction between the A. F. of L. and the C.I.O. apparently has decreased following the Wagner Act decision. The executive council of the former last week again sidestepped action to expel the Lewis unions, by calling a meeting of 108 loyal union heads in Cincinnati for May 18 to combat the so-called rebels. The delegates will not have power to expel Lewis and his associates.

Earlier in the week both Lewis and William Green, head of the A. F. of L., had attended a conference of industrial and labor leaders at Washington, sponsored by Secretary of Labor Perkins. In a harmonious meeting, those present agreed to consider collective bargaining contracts sacred and binding. The explosive sit-down strike situation was carefully avoided in the discussions.

LOUISIANA TAX CASE

Cannot deduct for waste; buyers held responsible

Baton Rouge, La.—Oil companies operating in Louisiana are not entitled to deduct from their severance taxes two percent for wastage and evaporation and are responsible for the payment of the tax on oil purchased from other producers, Judge James D. Womack held in the East Baton Rouge Parish district court Tuesday.

The decision came in a suit brought by the state against Standard Oil Company of Louisiana. An appeal was taken to the state supreme court.

Judge Womack gave the state a judgment for $142,915.02, made up of $46,808.67 alleged to be due from the two percent withheld on oil produced by Standard Oil Company between August 1, 1928, and December 31, 1936, plus penalties, and $96,106.35 for the same period on oil purchased from others.

Other Cases Pending

Cases filed against other operators are still pending. This is the first in which a decision has been made. It is understood that the other actions will be held in abeyance pending a supreme court decision in the present case.

The decision involved a definition of what is a barrel of oil, whether the state had forfeited its rights by not having previously collected the tax, and whether the purchasing oil company is responsible for the tax on the oil the company buys.

The state in its suit contended that the severance tax on oil is based on the gross quantity of crude oil and all natural component parts thereof and that the deduction of two percent is arbitrary and unsound.

The defense contended that it is entitled to deduct for the basic sediment and water and that the temperature must be adjusted to 60 degrees and that in addition a two percent deduction should be made.

The defense pointed out in the petition and in argument that the legislature had not defined "a barrel of oil" and that therefore the accepted usage in the oil industry should be taken as the definition. In accepted usage, it was testified, the two percent deduction for evaporation and waste is applicable.

Judge Womack held that the companies were not entitled to the two percent deduction.

He held that the fact that the state had not collected the tax for a number of years did not prevent the state from making the collections now, and that the company was responsible for the taxes on oil it purchases as well as on oil it produces, pointing out that the company has and does pay the taxes to the state on oil falling in both classes.

OCEAN OWNERSHIP

Federal government may claim title to oil lands

Washington, D. C.—Oil lands conservatively valued at $4,000,000,000 will be the stake in a controversy between the Federal Government and the State of California which is gaining impetus in Washington.

The lands involved are those lying off the coast of California, within the three-mile limit, from the leasing of which the state now is drawing royalties of approximately $1,000,000 a year.

That the Federal Government should assert its rights to these submerged lands has been agitated for nearly a year, and numerous voluminous opinions as to the government's right to titel have been written by officials in the Interior Department where, as in the Department of Justice, there is said to be a difference of opinion as to where ownership lies.

Nye Introduces Bill

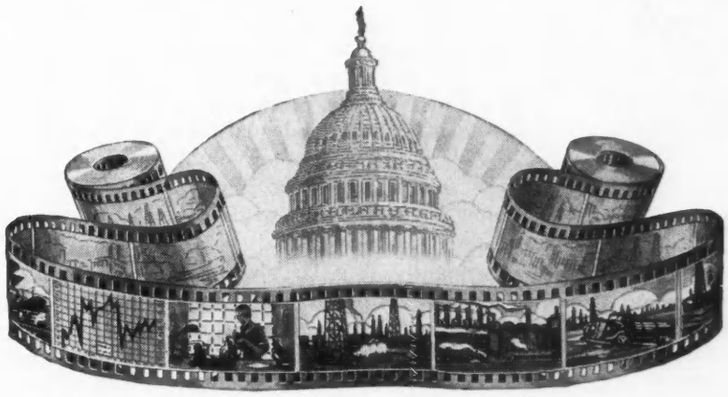
Believing that the government will not act in the matter unless forced, Senator Nye of North Dakota has introduced a bill in congress declaring "all submerged lands lying under the high seas off the coasts of the continental United States between the low-water mark and the three-mile limit" to be part of the public domain, such lands, with all minerals located on or under them, to be withdrawn from settlement, location, sale, entry, occupation, encroachment or acquisition.

The submerged lands so Federalized and considered by the president to be oil bearing would be made part of the naval oil reserves, to be known as General Naval Petroleum Reserve No. 1.

State ownership of oil lands lying off the Pacific coast has been a subject of controversy for a number of years. Repeated attempts to secure federal prospecting permits have been made, which have been rejected by the Interior Department.

[*Continued on page 58*]

The Changing Panorama



Recent strength in oil company securities indicates general optimistic attitude toward the industry's outlook.

Long-range as well as immediate prospects are favorable, with markets stable and oil consumption on upward trend.

Edited by L. J. LOGAN, Associate Editor

THE preponderance of moneyed opinion continues on the optimistic side, as regards the oil industry's outlook.

Investors and traders have been holding or buying oil company stocks in the past several weeks, while the prices of securities in some other lines as well as prices of commodities have lost ground.

The stock prices have been saying that the oil industry's prospects look comparatively good.

Speculative Buying Indicated

At the same time, it appears that there has been a certain amount of speculative buying of the oils, in the hope that heavy spring and summer business will stimulate earnings and push the stock prices higher. At any rate, much talking-up of the oils has attended their recent popularity; and it has been noteworthy that shares especially favored have been the lower priced ones, which are so often selected as media for quick profits.

In contrast, some of the higher priced oils have not fared so well comparatively. And yet among those higher priced securities are some that certainly should participate in any favorable earnings that may accrue in the industry.

It is perhaps significant, also, that there has been a continued favoring of producing companies and lower priced integrated companies well fortified with producing properties. This buying has fitted in well with the persistent rumors in financial circles that crude prices are destined to be raised soon.

Tomorrow's Crude Dearer?

However, it is undoubtedly true, also, that a substantial part of the recent buying of oils has been long-pull buying that has logically favored the producing companies and the integrated companies that are large producers. For the opinion appears to be widely held that crude oil produced tomorrow will bring higher prices than that produced today. This viewpoint has been publicly expressed, indeed, by several oil company executives, in recent annual reports to stockholders.

Immediate Outlook Promising

Whether the buyers of the oil company securities have been motivated by quick-profit or long-pull ideas, however, they have had some persuasive facts on which to base their action.

For the oil industry's immediate future and its long-term prospects both may be regarded as promising.

Earnings in the second quarter of 1937 apparently will be substantially better than in that period last year, just as the first quarter results of this year showed material improvement over those in the corresponding months last year. Thus for at least the opening half of this year, profits will be well over those in the comparable period last year. And so far, there are no circumstances to indicate any impairment of the industry's favorable earning power in the latter half of this year. Consequently, there is a good chance that 1937 profits will substantially exceed those of 1936. And 1936 was for most oil companies the best year since 1929, if not the best on record.

Long-Term Prospects Bright

Similarly, the long-term prospects for the oil industry and for the oil companies appear generally bright.

An optimistic long-range attitude may be justified not only by the possibility that tomorrow's oil prices will be better than those of today, but also by the fact that the oil industry still is a growing industry, offering possibilities for growth to the companies that operate within it.

In fact, it is the growth angle that lends to the oil industry and the oil

companies their principal attractiveness. The oil age stil is evolving, and the next several decades are expected to bring a further substantial increase in the consumption of oils. This means the oil industry is expected to grow to larger proportions. It indicates, similarly, that new oil companies will arise and that present oil companies will expand, in meeting the larger demands of the oil consuming public.

Future Prices Conjectural

Fully analyzed, there is only a speculative basis for bullishness toward oil companies on the assumption that oil prices will be higher in the future than at present. As in all other attempts to foresee the future, any forecast of tomorrow's oil prices must be based largely on past experience and trends. And it so happens that oil prices have not followed trends that safely may be projected into the future. Conditions within the industry and conditions affecting the industry have changed radically, causing great changes in the industry's markets and resulting in wide fluctuations of prices.

It is hazardous, therefore, to predict that oil prices will be higher, lower, or unchanging, in view of the past experience.

Moreover, prices are only relative, anyway, and are profitable or unprofitable only as they are related to the ever-changing producing costs. If oil prices rise in the future, despite competition, it will be because finding and producing costs are higher and necessitate the increased prices, to preserve normal profits. Conversely, declining oil prices might reflect lowered finding and producing costs rather than diminishing profits.

If any hopefulness at all is justified with regard to prices it is from the standpoint that proration has put oil production and the oil industry's general operations on a more orderly and stable basis. Because of the more orderly conditions, it is better assured that oil prices henceforth will be maintained at profitable margins above the costs involved.

Opposing Forces Affect Prices

Even as regards individual companies holding important oil reserves, it is largely speculative to be optimistic because of the possibilities of higher oil prices in the future.

In the first place, many elements enter into the determination of oil prices, making long-range predictions of the prices impractical. There are at present various factors indicating future price increases, including not only rising material and labor costs but also recent slowing down of the industry in finding new oil reserves. But at the same time, other influences are at work in the opposite direction, tending to hold down oil prices. They include economies and efficiencies in finding, producing, refining, transporting, and marketing oil, as well as the increasing volumes of business that make for comparatively low operating costs of oil companies.

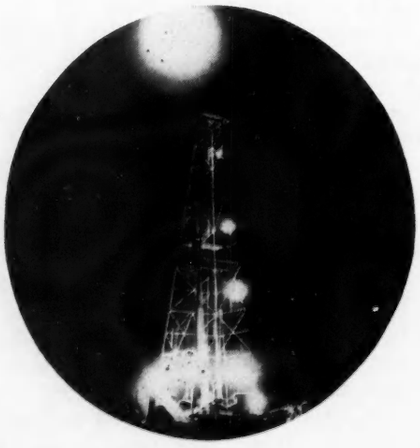
Consequently, it is largely conjectural whether oil prices will go higher or lower over the long-term future.

Value of Reserves May Change

It is similarly conjectural, therefore, whether an oil company with crude under ground will get more or less than the present price for such oil when it is produced and sold.

On the one hand, it seems quite possible that new oil fields will become more difficult to find in the future, and that oil prices consequently will go higher, despite technological progress and efficiency in the industry.

But on the other hand, the general trend in the past has been toward lower and lower prices of oil to the consumer, especially when increased taxes are considered. This trend has been in line with similarly declining prices in the automotive and some other industries, resulting from increased efficiency and lower producing costs. Consequently, it must be conceded as possible that tomorrow's oil prices will be lower than those of today, and that oil companies eventually will see their present underground reserves diminish in market value.



Crude Control Stricter

For the less obscure future in the weeks just ahead, the prospects are distinctly promising. Expectation of continued favorable earnings is based on the probability that the industry's markets will remain stable, that prices consequently will continue attractive, and that oil consumption will run at high levels as in the past.

Continued stability of the markets seems likely, in view of the comparatively strict allowables prevailing and in prospect in the leading producing states.

While crude oil production was excessive in the earlier months this year, under lax allowables, resulting in the running of substantial quantities of crude into storage, the April allowables are closer to indicated demand; and for the month, the additions to storage will be reduced, if not eliminated.

It has been intimated, moreover, that May allowables will be similarly strict.

Consequently, the crude production situation is fairly satisfactory, despite the unwarranted additions to storage earlier this year.

In the 11 weeks between January 23 and April 10, total crude oil stocks in the United States increased every week, expanding 12,257,000 barrels for the whole period.

However, the inventories on hand April 10 were 14,369,000 barrels smaller than those held one year previously.

More Talk of Crude Raise

The present improved situation regarding crude control has encouraged the hopes of producers for another moderate increase in crude oil prices.

It is contended that further raising of crude postings is needed in compensation for increasing costs of materials and labor. Moreover, it is stated that the present supply-demand situation of crude oil is causing the payment of premiums of 5 to 15 cents a barrel for crude in some districts, indicating that a general advance is warranted.

On the other hand, an argument offered against a crude raise is that the recent increases of about 10 percent in crude prices, put into effect late in January, have been only partially compensated by increases in refined oil prices. However, the product prices last week partially eliminated that objection, as tank wagon and service station prices of gasoline were advanced in several districts.

CIO Technique

UNDER the competent tutelage of the CIO organizers it is not surprising that improvements in lawless technique be developed in this fight, backed by Communism, being waged in the United States.

The newest addition to the CIO technique is the slow-down movement, under which the worker accepts pay for work from his employer, and then deliberately delays production.

Any fair-minded man would immediately say that a company should discharge an employe who is deliberately obstructing production, and this is what should be done and doubtless will be done, but the CIO movement is based on the feeling that public sentiment is invariably against the employer or that official sympathy is with them in their lawless efforts, and that consequently the employer no longer has the right to discharge a man who is either purposely or otherwise incompetent.

The Wagner law has been hailed as the move to stop strikes. Secretary of Labor Perkins has produced figures showing what she says caused most strikes. If the Honorable Secretary is right, then the confirmation of the Wagner law will stop strikes in the future. This, of course, is absurd, since the Secretary and other officials of the government do not condemn in the strongest terms lawlessness and sabotage.

We have no quarrel with organized labor, properly conducted, yet we have as distinct a quarrel with racketeering in the labor movement as we have with racketeering on the part of underworld individuals.

There is one consolation in this whole thing. The general public will not put up much longer with the continuation of tactics that are revolutionary in nature. The general public wants an employe fairly treated and will insist on such fair treatment, but the general public realizes that the employer, on whose shoulders is falling much of the burden of government these days, cannot carry on that burden and be at the mercy of racketeers.

USE OF DENSITY FACTOR IN PREDICTING NEW OIL RESERVES

Sets United States Just Short of Fifty

THE search for new oil fields is becoming more intense now that the demand for oil shows such a marked increase. The one question uppermost in oil men's minds is where is the new oil to come from, and how much of it is there?

The answer to this question is attempted here. There seems to be no reason for alarm over any impending exhaustion if the conclusions herein presented are sound. Past history definitely tends to bear out optimistic rather than pessimistic views of future oil.

The Density Factor

The "density factor" used here as a basis for calculations is merely the ratio of producing acreage to the total producing acreage plus prospective acreage in each state.

Table 1 with the explanatory notes presents the working material.

It is interesting to note that the States of West Virginia, Pennsylvania and Ohio, all states with many oil and gas horizons, have density factors of 6, 6.8 and 12.7, respectively. Texas, Oklahoma and California have densities of 84, 61 and 32.4 respectively. Colorado with 1679, New Mexico with 1280 Michigan with 635, are only partially prospected. Illinois and Indiana with 217 and 251 respectively; and falling geographically between Ohio with 12.7, Kentucky with 25.3, Kansas with 87 and Oklahoma with 61, should certainly produce far more oil than at present. The ranking presented in Tables 1 and 2 bring out the important features.

Classifying the states in order of their importance as future oil producers (estimates based on density factor calculations) is shown in Table 2.

Future Important States

The states that are 50 percent or less developed are states that have not shown large potential production

TABLE 1

Reserve calculations made by use of the Density Factor.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Rank in Area	STATE	Estimated Prospective Oil Acres	Proven Acreage	No. Producing Formations	Estimated Reserves (Millions Barrels)	Total Produced to January 1, 1935	Total Produced Plus Reserves	Density Factor	Probable Density Factor	Percent Proven	Percent Unproven	Factor of Future New Oil	Total New Oil Expected (Millions)	Oil Reserves Plus Expected New Oil (Millions)	Total Ultimate Production (Millions)
26	Arkansas	10,084,800	67,240	7	75	419	494	156	70	45	55	1.22	503	578	997
2	California	4,682,000	148,885	26	3,500	4,419	7,919	32.4	25	77	23	.298	2,375	5,875	10,244
7	Colorado	32,335,132	19,210	4	12	32	44	1,679	400	24	76	3.16	139	151	183
23	Illinois	24,700,000	113,615	20	35	421	465	217	100	46	54	1.18	538	573	994
37	Indiana	20,761,920	83,000	11	5	122	127	251	100	40	60	1.50	190	195	317
13	Kansas	39,774,774	459,420	30	400	779	1,179	87	50	58	52	.72	849	1,249	2,028
36	Kentucky	14,478,018	573,733	20	35	140	175	25.3	17.5	79	21	.26	45	80	220
30	Louisiana	28,189,900	368,376	25	375	596	971	77	40	52	48	.92	893	1,268	1,864
22	Michigan	26,118,912	40,980	8*	45	54	99	635	100	16	84	5.75	569	614	668
3	Montana	49,661,159	351,290	6	300*	54	354	142	35	25	75	3.0	1,062	1,362	1,416
4	New Mexico	24,451,400	19,120	4	350	96	446	1,280	200	16	84	5.25	2,341	2,691	2,787
29	New York	9,556,050	110,000	15	40	104	144	87	70	80	20	.250	36	76	180
33	Ohio	16,634,950	1,303,000	13	30	571	601	12.7	10	79	21	.26	156	186	757
17	Oklahoma	37,316,966	620,000	36	1,200	3,900	5,100	61	45	74	26	.35	1,785	2,985	6,885
32	Pennsylvania	12,136,920	2,100,000	33	240	898	1,138	6.8	6.5	88	12	.136	155	395	1 293
1	Texas	153,156,464	1,842,724	31	6,500*	[4,190	10,690	84	50	60	40	.666	7,120	13,620	17,810
40	West Virginia	7,964,873	1,569,300	27	25	392	417	6	5.5	90	10	.11	46	71	463
8	Wyoming	40,205,383	89,892]	18	500*	401	901	448	250	56	44	.78	702	1,202	1,603
	Total	561,150,241	9,887,750	332	13,667	17,588	31,258	57+	..	55	45	....	19,504	33,171	50,759

EXPLANATIONS:

Column 8=Column 6+7
Column 9=Column 4+3
4
Column 11=Column 10÷9
Column 12=100% — Column 11
Column 13=Column 12÷11
Column 14=Column 8X13
Column 15=Column 6+14
Column 16=Column 8+14

REFERENCES:

Columns 1, 3, 4, and 5 from article by L. G. E. Bignell, Oil & Gas Journal January 30, 1936.
Column 6 from American Petroleum Institute.
* Indicates changes made by Dorsey Hager.

By DORSEY HAGER, Consulting Geologist,
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Future Recovery Billion Barrels

per acre. With the exception of New Mexico, Illinois and Michigan, none of those states rank high as oil states and are not likely to change their rank.

The states that will prove important future areas for new oil fields of fair potential are Texas, Louisiana, New Mexico, Kansas Illinois, Montana and Michigan.

Oklahoma and California will develop new oil fields of importance, but those states are well past their peaks for numerous new fields compared to those in their past. Tennessee, Utah, Mississippi and Missouri all produce a little oil, but not enough to be of any present importance. The first three of these states, however, possess possibilities of new oil of importance, and must be included in any estimate of possible producing states. Eastern Wisconsin should possess some shallow oil fields in the Trenton formation. A narrow strip along the eastern side should have oil possibilities.

The finding of petroleum in the Tertiary beds in the Powder Wash field of Moffatt County, Colorado, opens new areas in Wyoming, Colorado, Idaho and Utah; but the total producing areas should not be large.

States that may yet become oil producers are Southern Alabama, Mississippi, northeastern Arizona, Florida, the two Dakotas, Nebraska, Iowa, Washington, Oregon and eastern Wisconsin. Entrance of any or all these states into the production columns would increase the anticipated recovery set up here.

Estimates of Future Recovery

Table 3 summarizes the possible petroleum production from present producing states and by present producing methods. It will be noted that by the use of the "density factor" it may be calculated that the total ultimate production of the United States will eventually be 50,759,000,000 barrels. Since the United States had produced 17,588,000,000 barrels up to January 1, 1935, and reserves at that time were calculated to be 13,667,000,000 barrels, a total of 31,258,000,000 barrels of oil had been discovered in the country. This would leave (according to the density factor figures) 19,504,000,000 barrels of new oil reserves to be discovered in the future, which plus the estimated known present reserve would mean the United States in the future would produce 33,171,000,000 barrels of oil.

Improved Methods Boost Total

However, this figure does not take into account any improvement in recovery methods, in which there has been considerable advancement, and which should continue to be improved in the future. Therefore, Table 4 has been prepared. This table presents what the writer considers may prove to be the possible future production. In this table the recovery of more oil by improved recovery technique has been set at 20 percent. Using the figures obtained by the density factor, plus the 20 percent due from improved recovery methods, the figure of 33,171,000,000 barrels of future production is raised to 44,831,000,000 barrels. A total of five billion barrels of possible new oil has been allotted in this figure for all the present non-producing states, including the slightly productive states of Missouri, Tennessee, Mississippi and Utah.

Deeper Drilling Possibilities

In this discussion the potentialities of deeper pay sands in the present producing oil fields has not been raised. Each deeper sand tapped is equivalent to finding a new field. In many areas the deepest pays are known, but in some Illinois and Oklahoma fields and in numerous Texas and California fields, the deeper horizons have not been touched. These deeper

TABLE 2

Classification of States by Rank as Future Producers.

Rank	STATE	Percent Developed	Expected New Oil (Millions of Bbls.)	Density Factor
1	Texas	60	7,120	84
2	California	77	2,375	32.4
3	New Mexico	16	2,341	1,280
4	Oklahoma	74	1,785	61
5	Montana	25	1,062	142
6	Louisiana	52	893	77
7	Kansas	58	849	87
8	Wyoming	56	702	448
9	Michigan	16	569	635
10	Illinois	46	538	217
11	Arkansas	45	503	156
12	Pennsylvania	88	255	6.8
13	Indiana	40	190	251
14	Ohio	79	156	12.7
15	Colorado	24	139	1,679
16	West Virginia	90	46	6
17	Kentucky	79	45	25.3
18	New York	80	36	87
	Total	55	19,504	57+

TABLE 3

Summary of possible production from present producing states by present producing methods.

SOURCE	Millions of Barrels	
Total production to January 1, 1935	.....	17,588
Estimated reserves, January 1, 1935	13,667	.....
Expected new future production	19,504	.....
Total reserves plus new production	.....	33,171
Total ultimate United States production	.....	50,759

sands constitute true oil reserves and will produce much oil. They are not considered in the present reserve study. True they have not been proved to underlie specific fields, but the geologic evidence indicates that they must be present; in some places from 6000 to 15,000 feet in depth. Depths of 10,000 feet are no longer a drilling problem. Where the rotary system can be used the cost of such deep holes is not prohibitive. However, deeper drilling in many areas will not result in more production as all possible productive horizons have been tested. In only a few areas, such as some parts of Ventura County, California, parts of the San Joaquin Valley, the Tertiary covered areas of Wyoming, the Gulf Coast of Texas and Louisiana, and the salt basin of West Texas. should depths of 12,000 to 15,000 feet encounter horizons bearing oil.

Such deeper oil possibilities must be given weight in any appraisal of future new oil, although in this paper they have not been used. Such reserves might be considered here as an additional insurance on which to base estimates given in Table 4, and actually indicate that the figures there may be too low.

Conclusions

To January 1, 1935, there had been 17½ billion barrels of oil produced. The estimated new possible production less a billion barrels produced in 1935 and 1936 (each) total 42½ billions, or slightly less than 2½ times the cumulative amount produced to January 1 1935.

There is good reason to expect the new oil or future production, including present estimated reserves, to be between two and three times the quantity produced to date. On the basis of a withdrawal of one billion barrels annually there should be sufficient oil obtained from wells for the next 30 to 40 years to care for the Nation's needs. The day of obtaining oil from shale and coal in the United States is still a generation away.

Without question the search for new oil fields will result in a more rapid drilling campaign, and the proportion of dry holes will show a marked increase—since oil fields are becoming scarcer and the limit will be reached before oil men realize the fact. But it is difficult to predict when such a condition will occur. All past estimates have allowed too short a time for the extinction of oil reserves. Each new estimate of reserves surpasses past estimates until many oil men no longer put much faith in such predictions. In fact, the more the engineers evaluate the oil reserves, the more they seem to come to the conclusion that there are no sound methods to predict the future fields to be found except by the history of past exploration. All the oil fields of consequence were supposedly found 15 years ago, but since then there have been more great fields opened than in all the earlier history of the oil business. No wonder the conservative engineer and geologist does not know what to say about future fields. He has understated the case every time until he feels that he lacks sound ground to make future predictions.

The views expressed here may seem extreme but they are presented with full consideration of the possibilities. Only the closest cooperation between the engineers and the oil producers can affect the full exploration and exploitations of the petroleum bearing measures of the Nation. Government and state assistance should also be invited.

A realistic attitude will insure the finding of far more oil than has been anticipated by the engineers who are naturally conservative. The oil producers are often too sanguine, but they have been correct in their attitude and in their generalized predictions more often than the geologists and the petroleum engineers. The oil producers are in the final analysis the men who spend their money for testing.

Geological and geophysical methods are invaluable guides and aids to the successful exploration for oil and gas and will be used more in the future than in the past. But, after all, the final arbiter is the drill and oil fields which will be found where engineers will not advise venturing. Engineering conservatism is highly desirable and will insure the opening of the oil fields with the minimum of risk and loss, but that does not preclude the taking of risks in some areas that are now thought unfavorable.

TABLE 4

Summary of Possible Future Production in United States.

SOURCE EXPECTED NEW OIL	Millions of Barrels	
Estimated reserves, January 1, 1935	13,667	.....
Additional oil from improved methods (20 percent)	2,750	.....
	.....	16,427
Oil from new fields in producing States	19,504	.....
Additional oil from improved methods (20 percent)	3,900	.....
	.....	23,404
All other possible production (new States)	.....	5,000
Total anticipated future production	.....	44,831

Study of Problems Simplifies Operation in Unusual Field

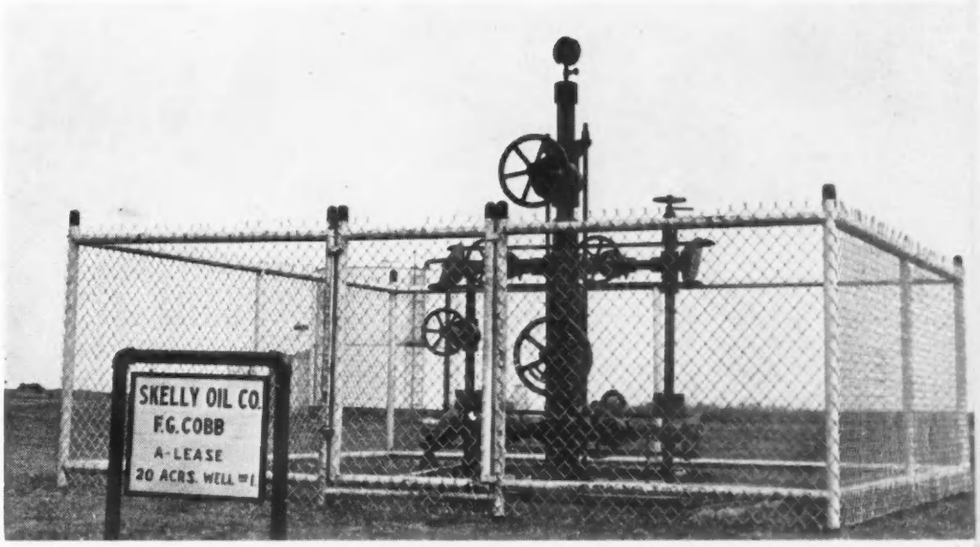
MATAGORDA COUNTY AREA STARTED OUT TO BE A PRODUCTION PROBLEM

By BRAD MILLS, Associate Editor

A STUDY of drilling and producing conditions in the Van Vleck (Bay City), Texas field has enabled Skelly Oil Company to develop and operate its holdings in a normal manner, despite early indications of high pressures and excessive gas/oil ratios. A novel well completion program, improved production practices, and lower treating costs stand out as contributions to a constructive field program. Twenty one wells have been completed at various levels between 7000 and 8200 feet, but the gas/oil ratio has been held to such a low figure that no gas is being wasted. Van Vleck is one of the few new Gulf Coast fields that shows no gas waste. Field consumption of gas for field development has equalled or exceeded production since completion of the first well in March, 1934.

The Van Vleck field is located 2 miles north of the little town of Van Vleck, Matagorda County, and 4½ miles north of Bay City, the principal supply point. The discovery well was Skelly Oil Company's F. G. Cobb 1, M. Cummings Survey, which was drilled to 7076 feet and tentatively completed with an initial production of 120 barrels of 49 gravity oil. This well subsequently was drilled deeper and completed in November, 1935, to produce from sands encountered between 7460 and 7470 feet.

The structure probably is a deep-seated salt dome, but no salt has been encountered. The discovery well indicated a flow of very high gravity oil, but subsequent development classed the field as a more normal producing area. Production is obtained from four distinct levels, one in the Oligocene between 7025 and 7075 feet, one in the Marginulina between 7460 and 7510 feet, and a third in the Frio between 8200 and 8230 feet. A fourth producing zone has been developed at about 7900 feet. Six or eight sands have been classified, but they belong to only four principal groups. The field was indicated by slight surface irregularities, but the reflection seismograph and a correlation of old shallow wildcats also were important factors in the discovery.



Completed wells at Van Vleck have this neat and business-like appearance.

Drilling and Casing

The drilling and casing programs at Van Vleck have not been uniform, due to the several completion depths and the nature of the formations. The field is believed to be the only producing area in the world with a full "top to bottom" casing program. The hole is fully protected with regulation casing, and production is obtained from some level above the bottom of the casing shoe. Gun perforation of casing opposite producing zones probably has reached a more advanced stage in this field than in any producing district in the world. Through a combination of formation testing, electrical logging and gun perforation, wells are completed to produce through

perforations in the casing. Cementing also has reached a high state of development in this field.

Skelly Oil Company also has made a careful study of gathering, separating and treating conditions. The flat nature of the area does not permit gravity flow to storage, but the lack of surface contrasts has its advantages. All field lines are buried, and permanency is reflected by installations at tank batteries and central storage points.

Drilling conditions are not severe but formations near the top and bottom of the hole give some trouble when the mud is not properly conditioned. A 13-inch hole is started, a much smaller size than in the average 8200-foot field. A protection string of 10-inch casing is run at about 1400 feet and an effort made to cement from top to bottom. A small amount of cement is pumped on the outside of the casing string at the top of the hole as a precautionary measure. The loose sand near the surface gives trouble when the drilling mud is not kept in good condition while drilling the first 100 feet of hole. The entire cellar of one well was undermined from channeling, following rapid drilling operations that gave little attention to the condition of the drilling mud during the initial period.

A 9⅝-inch hole is drilled from the shoe of the 10-inch casing to bottom, regardless of the completion level. When it is known that a well will be completed at a certain level, the full size hole is drilled and a full string of 5-inch casing is run and cemented on bottom. When the completion level is not known in advance, a string of 7-inch casing is run and cemented at some level below 7000 feet to protect sand bodies encountered and satisfactorily classified.

When a 7-inch casing string is run and more hole is made, a stub string of 5-inch casing is run to bottom, cemented, and packed off on top at some point near the bottom of the 7-inch casing. Whether a single 7-inch string or a 7-inch string and a stub string of 5-inch is run, the hole is protected from top to bottom with regulation casing.

Cementing Is Thorough

In cementing the short 5-inch casing section, an effort is made to force the cement upward to the shoe of the 7-inch casing. The objective is a full cement bond from bottom to a level well above the bottom of the 7-inch casing. Theoretically, this has been done where the 5-inch stub strings have been run in the longer 7-inch strings, but it is recognized as a very difficult job to force the cement fully and evenly to the shoe of the 7-inch shoe. The company is considering gun perforating the extreme top section of the 5-inch casing at a level immediately below the shoe of the 7-inch string, and "squeezing" cement out to make sure of full protection to the formation. This has not been done, however.

After running and cementing the 5-inch casing section, no additional hole is made. The cement is drilled out to a point a short distance above bottom of the casing, leaving the cement in bottom to effect a shutoff from below. The formation at the bottom of the hole is carefully logged and checked before casing is run. The casing arrangement in effect gives a full casing string from top to bottom, with cement on the outside of the casing from bottom to a point well above the highest producing zone. The company has not found the cement harmful to the producing zone.

A high percentage of the hole below the top of the first producing zone is cored. Formation tests are made when they appear warranted. Electrical logging devices also are used before casing is run. The condition of the hole below the first oil showings is determined and all formations classified before the hole is completely protected by casing and cement. It is then a comparatively simple task to test producing formations that showed promise during preliminary tests or surveys.

In a typical well completed some time ago, the hole was drilled to 7490 feet. A string of 7-inch casing was cemented on bottom with 600 sacks of cement. The cement was drilled out in the casing to 7489 feet. The casing was gun perforated with 30 shots between 7483 and 7485 feet to test a promising stratum. The well came in as a good producer. Tubing was run to 7486 feet, the short perforated joint in bottom having been placed opposite the shooting level in the casing.

Develop New Completion Practice

Skelly Oil Company's Rugeley 2, now being completed, was drilled to 8264 feet, after a string of 7-inch casing had been cemented at 7515 feet to protect sands already classified. After cementing the main casing string and drilling to the present bottom, a stub string of 5-inch casing was run, cemented on bottom and packed off in the 7-inch casing a short distance above the shoe. The 5-inch casing was gun perforated with 12 holes between 8060 and 8072 feet, but too much water was produced with the oil flow obtained at this level. Cement was squeezed through the shot holes and the effort abandoned at this point. The 7-inch casing was then perforated between 7490 and 7500 feet, but again water gave trouble. These perforations also were cemented off, and the well will be completed at another level. Regardless of the number of tests made, it is an easy matter to keep the casing string intact and in condition for tests at other levels.

A 500-barrel portable clean-up tank is used to save oil during production tests. After a well has freed itself of wash water and starts making oil, the flow is turned into the portable clean-up tank so that oil produced may be saved. The tank is useful during a sustained testing period, during which it is difficult to determine whether a well should be produced or tested at another level.

Separators used are the 500-pound type, but they operate at a pressure of about 200 pounds. All separators are tied into one main gas system. The company has experimented at various times with well flows, but found that lowering or increasing the pressure on the separators had no appreciable effect on either the gravity of the oil or the gas/oil ratio. The hope that the average gravity of the oil might be raised through changes in flowing pressures did not materialize.

The flow tanks are the 500-barrel, 2-ring type, and a typical well battery includes three tanks. Cement walks, steps and risers are provided at each tank battery, and cleanliness is stressed by the management.

The average gravity of the oil is 37 degrees. The first completion showed a very heavy gas flow and a poor gas/oil ratio, but more recent completions have been normal producers. The average gas/oil ratio is less than 600 to 1, and a few wells have a

much better ratio. The gas is drier than that usually produced with light oil.

Paraffin Deposits

Paraffin has given trouble in several wells and all producers are affected to an extent by paraffin deposits. The production rate affects the accumulation of paraffin, as well as the entry of sand into the hole. Some of the wells are flowed from 8 to 10 hours daily to obtain their allowable, while others are produced the full 24 hours. The paraffin deposits extend from the surface to about 600 feet.

Skelly Oil Company has been experimenting with equipment designed to reduce or eliminate paraffin trouble, and has attempted to develop original practices of its own. Recently a special go-devil or "rabbit" was installed in the tubing, the device being free to move up or down. A brass ring is placed in the tubing near bottom of the paraffin level, and the go-devil, or paraffin scraper, is caught by this ring when it sinks to bottom. The scraper is built in the form of a tube and is slightly smaller than the nominal inside diameter of the tubing. On the top and bottom of the scraper or go-devil are spiral, "pinion gear" type terminals that cause the device to turn when moving in the tubing. The scraper was designed to prevent the accumulation of paraffin in the tubing. The clearance between the device and the tubing is enough to permit the well to flow its allowable without pushing the scraper to the top of the tubing. Once each day the well is flowed rapidly, and the force of the flow pushes the go-devil to the surface. It is caught by a special arrangement in the Christmas tree. When the scraper reaches the top of the tubing, it is known that the paraffin accumulation has at least not reached dangerous proportions, and theoretically it has been held to the thinnest form of deposit inside the tubing. The scraper is furnished with a ratchet-type pin that projects a few inches upward, so that it is possible to go into the hole with a small overshot and recover the scraper when it sticks.

The scraper or go-devil was patented by a well known manufacturer and was not designed by Skelly Oil Company. The flow arrangement at the surface is such that a well may be flowed regularly through a side outlet while the scraper is on or near bottom. When the flow is increased to force the scraper upward, the fluid passes straight upward past the side outlet, forcing the scraper into a trap. The flow then is stopped or sent through the conventional side outlet while the scraper is being inspected or removed.

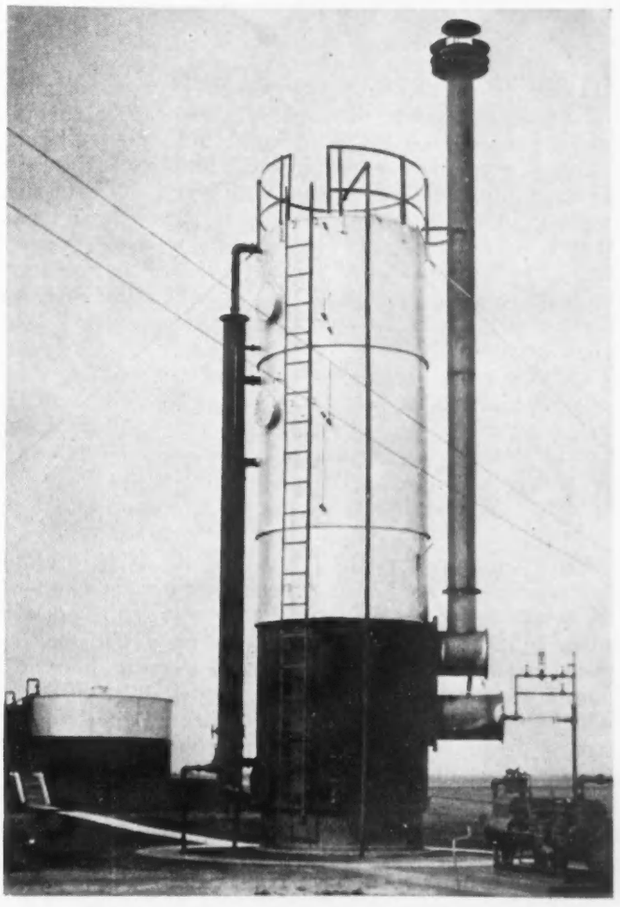
Paraffin is present in oil from all producing levels, but that found at the 8200-foot level is a different type from that encountered at the 7500-foot level. Paraffin from the 8200-foot level stays soft and soluble, while that from the 7500-foot formation becomes hard easily and is much more difficult to handle. It has been necessary to clean out the 7500-foot wells as often as every 30 days, but in the 8200-foot producers it has been possible to keep wells on production without shutting them down for cleaning out. Paraffin in the 7500-foot levels has killed flowing wells showing a tubing pressure of 1200 pounds.

The company developed and used a special electric heater, but it proved a failure. It was possible to melt the paraffin in the hole, but the chemical reaction caused the paraffin to become even harder immediately after it was melted. The heat also seemed to "dry out" the paraffin, which added to the hardening action. The heater consisted of a small element that set up a circuit when a contact touched the tubing.

Treating Practice

Skelly Oil Company has perfected its treating practice to a point that gives oil showing only 1/10 of 1 percent water or sediment. The oil is heated to 170 degrees and sent through a baffle type treater. The actual treating cost is about 6 mills per barrel, and the labor cost about 2½ cents per barrel.

The gathering and pumping system is complete. The pickup pump at the central plant is a 7x10 low pressure pump that is driven by a 35-horsepower multi-cylinder gas engine. A suction of 15 inches of mercury is carried on the field lines, and the oil is discharged to storage at a pressure of 5 pounds. The pump has a capacity of 500 barrels per hour. Two larger 7x10 pumps with 6-inch liners send the oil to market, a distance of 20 miles. Each pump is driven by an 80-horsepower multicylinder gas engine. They have an average discharge pressure of 450 pounds. All pumps are V-belt driven.



Production from all wells is treated in a central plant of the verticle type.

Twenty-one wells have been completed and the field allowable is about 1800 barrels daily. The most recent commission order gave each well an allowable of 90 barrels daily, a reduction from the previous schedule. The producing limit of the field has not been fully defined, and development is by no means complete.

PRACTICAL GRAPHICAL AND APPROXIMATION METHODS FOR

Dip Shooting Calculations

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The Pennsylvania State College,
State College, Pa.

IT is useless to stress the present day importance of the seismograph method of prospecting for oil structures, well over a hundred field crews being actively working in the United States; mainly in Texas, Louisiana, California, Oklahoma, Kansas and eastern Colorado. It is also generally known that different methods of obtaining the underground structures are used, principally the refraction and reflection methods. Nowadays the refraction method is used very little except for special conditions like the discovery of large salt dome structures on the Louisiana and Texas Gulf Coast or where reflection methods fail, as in southeast Colorado. The bulk of seismograph field crews thus employ the reflection method either by correlation or by dips. Because of its widespread use, practical methods of calculating dips by graphical and approximation methods are of interest, and are the purpose of this article.

Correlation reflection shooting consists in obtaining records of identified characteristic reflections in an area where the formations are well stratified and show but little or gradual convergence. Dip reflection shooting consists in obtaining records showing unidentified reflections but from the configuration of which it is possible to compute the dip of the subsurface formations. This particular method, which is generally less understood, will make the object of the present study.

The dip shooting method itself may be divided into different field procedures: 1. Straight dip shooting; 2. Correlation dip shooting; and, 3. Continuous profiling.

Necessary Subsurface Conditions

In order that the elastic energy be reflected from subsurface formations it is necessary that a density contrast exists between the different beds. A shale-limestone contact offers the most desirable interface on which the elastic wave set up by an explosion at the surface of the ground is reflected in a manner similar to the production of the echo of a sound wave by a mountain side. The reflected wave or echo is picked up at the surface of the ground by a series of detectors strung in a line passing through the shot point. If the formations are not well stratified, the reflections are inconsistent and can not be correlated from station to station. A subsurface condition suitable for dip work is illustrated in Figure 1 where the dark reflecting horizons pinch out but where their interval remains relatively constant. If, however, it should be possible to obtain the dip of the formation at different points, a subsurface contour map could be drawn on a phantom horizon in a manner similar to surface mapping of outcrops by the dip and strike method. This is precisely the method used in dip work.

Straight Dip Shooting

When the detectors are strung from 1 to 5 (Figure 1) the seismic energy emitted by the explosion in T travels down dip and it is easily understood that the time differences between the travel time required along path $TR_1 1$ and the travel time required along path $TR_5 5$ will be larger than when the reflecting horizon is lying flat in the subsurface. Conversely should the seismic energy travel up-dip, the difference between the overall travel times to the first and last geophones of the spread will be smaller than for a horizontal reflecting horizon. This difference may even be negative if the subsurface dips are sufficiently steep. These conditions are well summarized in Figure 2, where theoretical records are represented for the following set of conditions:

Overall velocity to the reflecting bed	6000 feet/sec.
Depth	7000 feet
Spread (distance from shot point to the center geophone)	1000 feet
Distance from first to last geophone	1000 feet

and for the following dips: $= 10°$, $0°$, $-5°40'$ and $-10°$. (A minus dip is representative of the energy traveling up-dip.)

It is noted that for a dip of 10° the difference of time between the geophone No. 1 and No. 5 (the so-called "step-out time" usually represented by Δt) is equal to .045 second. For a horizontal bed $\Delta t =$ .017 second and is called the normal step-out time. For a dip of —5°40′ (the energy traveling up-dip)

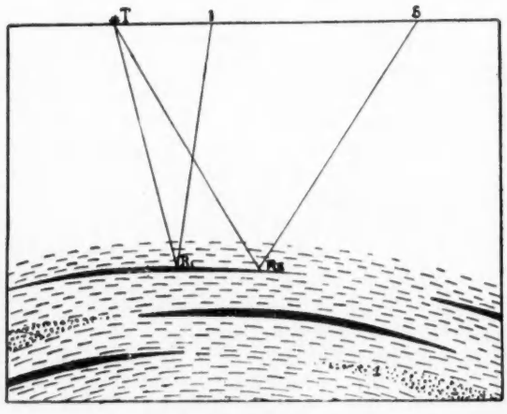


FIGURE 1

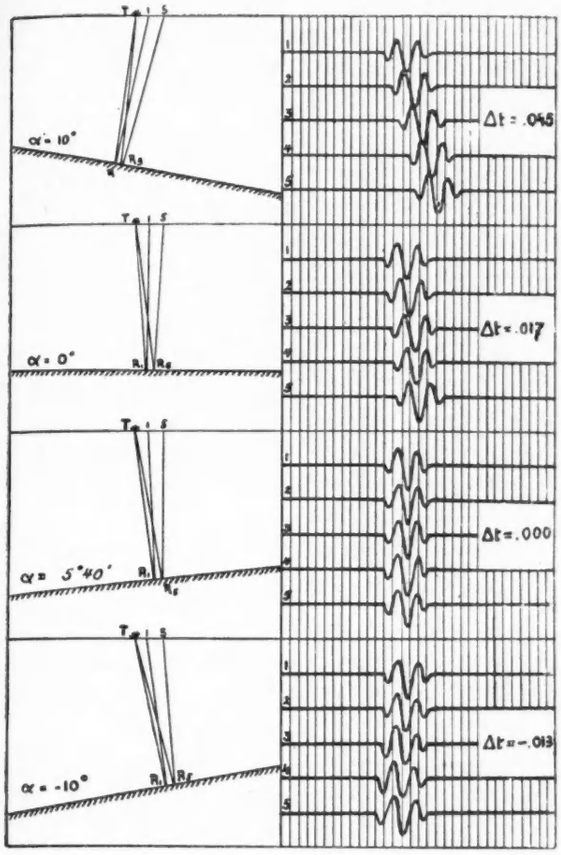


FIGURE 2

the normal step-out time and the negative increment due to dip cancel each other and the reflection arrives at all the geophones simultaneously ($\Delta t = 0$). Shooting up-dip on a bed whose slope is 10° and for the above conditions a negative step-out time is obtained ($\Delta t = -.013$ second). One can readily see that a relation exists between the dips of the subsurface formations and the step-out times read from a seismograph record. Mathematically this relationship is expressed by a somewhat complicated formula which is not used as such in practice. It is the purpose of this paper to indicate the practical methods of calculating dips by graphical and approximation methods.

Graphical Calculation

The simplest and also a theoretically accurate method of determining dips is by graphical calculation. If the overall velocity V to different depths are known the products VT_1 and VT_5 are computed. T_1 and T_5 respectively are the overall travel times from the shot-point to the first and fifth geophone of the spread. With the quantities VT_1 and VT_5 as radii expressed in feet and reduced to the scale of the geologic cross-section, arcs of circle are drawn with points 1 and 5 respectively as centers (Figure 3). These arcs intersect at T′ which is the elastic image of shot point T. Consequently the reflecting bed is given in dip and position by the median of the distance TT′.

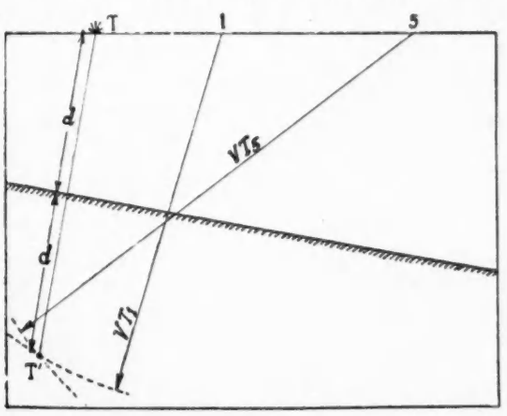


FIGURE 3

This calculation method is unwieldy and mechanical imprecision in the dip determination occurs due to the uncertainty as to the exact location of the intersection T′.

Nomographic Method

Nomographic methods of dip calculations are usually preferred because of their rapidity and dependability. A chart commonly used on the Gulf Coast is given here (Figure 5) as an example, together with the simplified theory underlying its construction. Considering the first and the last geophones of a dip spread, the locus of the image of the shut-point with respect to the reflecting bed is located on an ellipse whose foci are the first and last geophones. Let us consider Figure 4 which is drawn so that the horizontal scale is one half of the vertical scale and which represents a vertical cross-section of the subsurface through the geophone spread 1, 2, 3, 4, 5 and the shot-point S.P. A horizontal reflecting horizon is first assumed and a certain normal step-out time $\Delta t = .015$ second is observed for a given spread, shot-point location, depth and velocity. If we further assume that the shot point takes a variable location along the spread, the other quantities (total travel time, depth of horizontal reflecting horizon and velocity) remaining constant, the image of the shot point will then vary on the ellipse and its different positions can be graduated according to the corresponding normal step-out time. Knowing the seismic

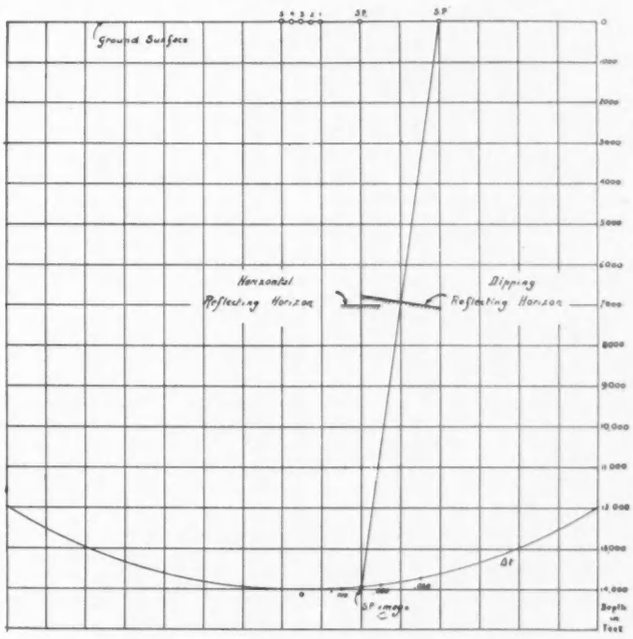


FIGURE 4

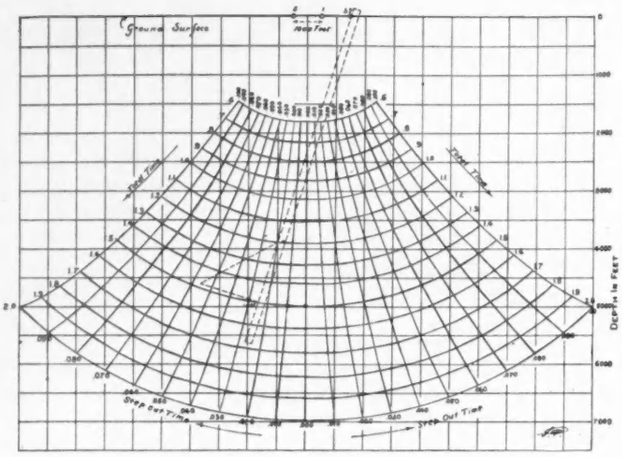


FIGURE 5

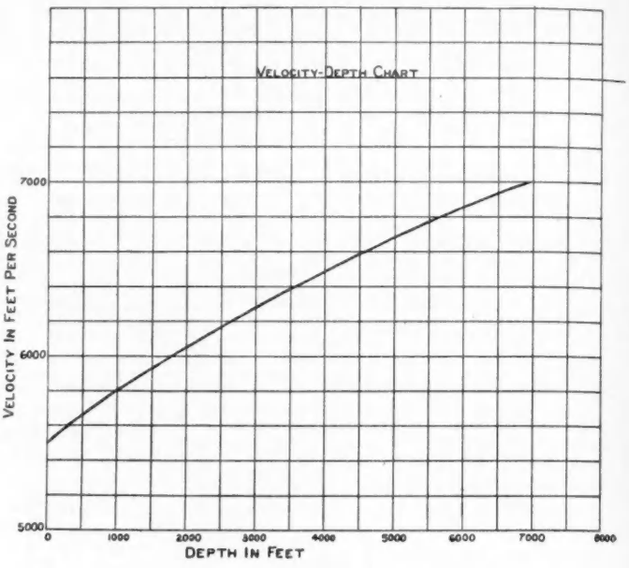


FIGURE 6

velocity gradient with depth in a particular region it becomes possible to draw ellipses of equal total travel time and to graduate them according to normal step-out time. Lines of equal step-out times can also be drawn on the chart and one can readily see that the problem is symmetrical about a vertical axis passing through the middle geophone.

The general procedure of construction of the chart as represented in Figure 5 is thus explained. It is however necessary to know the velocity increase with the increase in depth of burial of the reflecting formations. This is obtained in a well-velocity determination by lowering a geophone down an uncased well at different levels and recording the time elapsed for the travel of the elastic wave from the shot point at the surface down to the geophone. On the Gulf Coast area velocity gradients remain practically unchanged over large areas and a chart like Figure 5 is good for dip determination on extensive surveys. Figure 5 is obtained from the velocity-depth function shown in Figure 6 which is fairly representative of conditions met with in the Gulf Coast region.

We must see now how the chart can be used in calculating dips. Referring again to Figure 4 and assuming identical geophone locations but another position S.P.′ of the shot point and that an identical step-out time

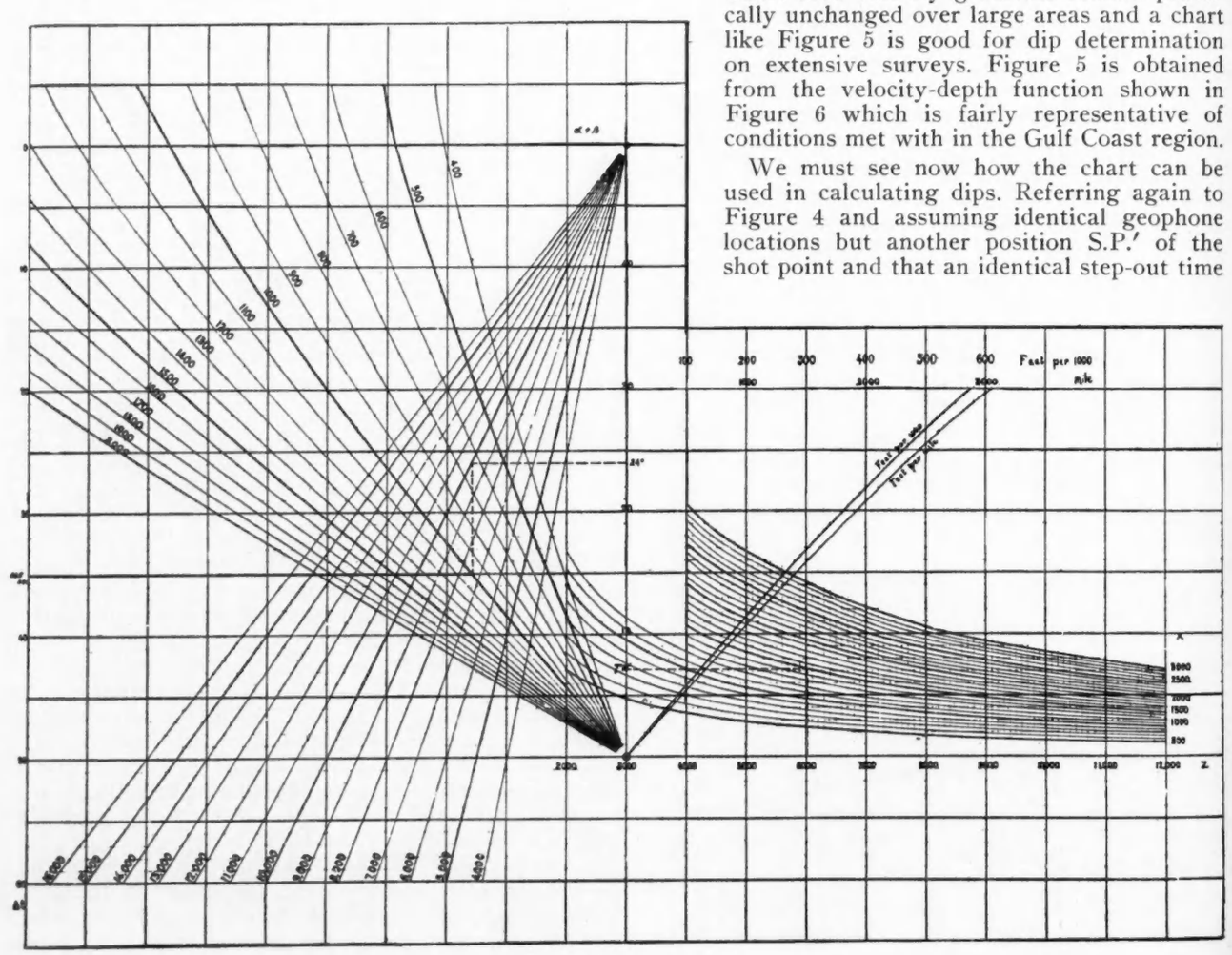
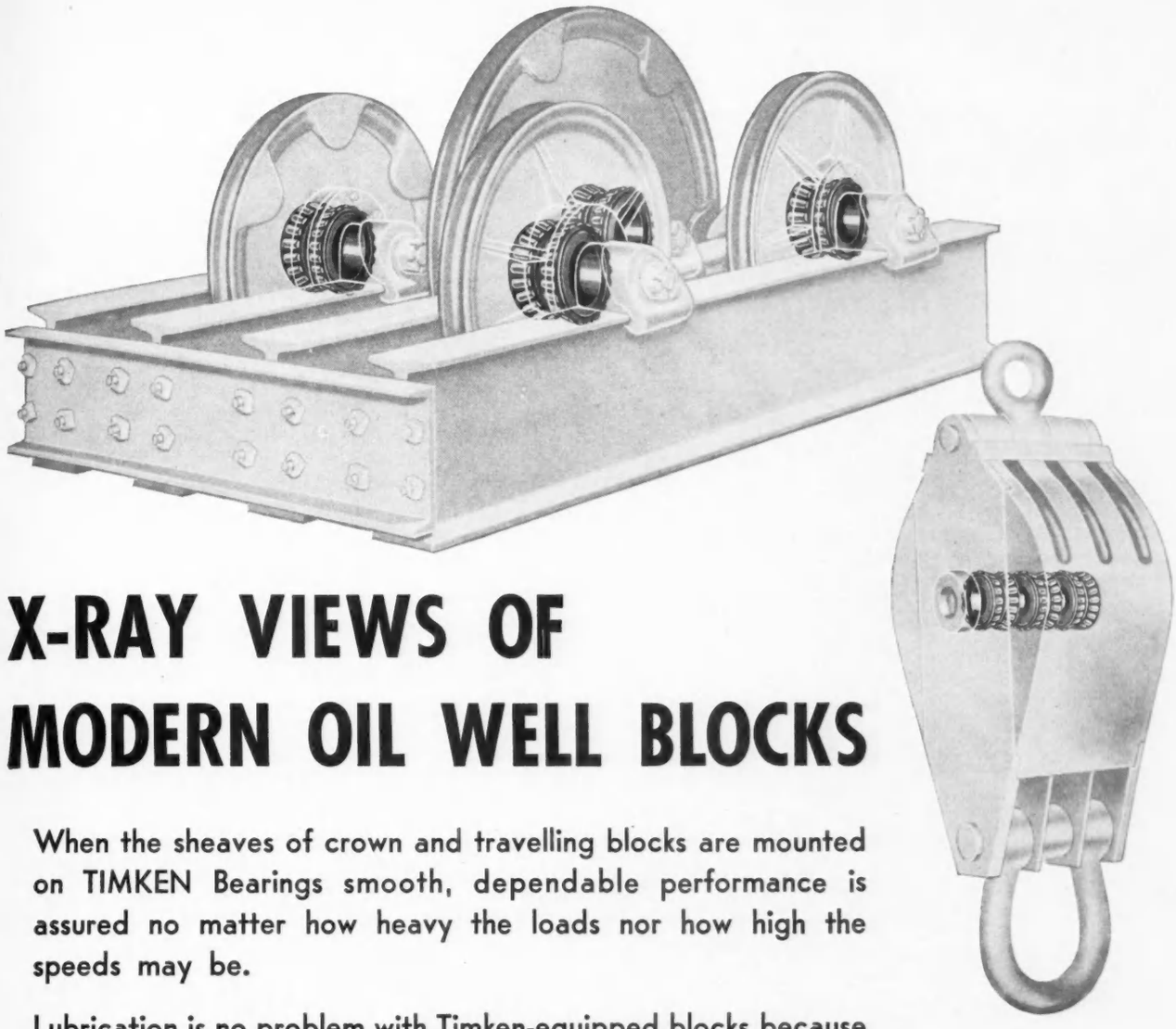


FIGURE 8



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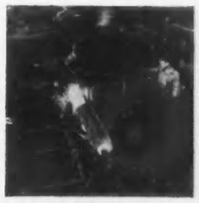

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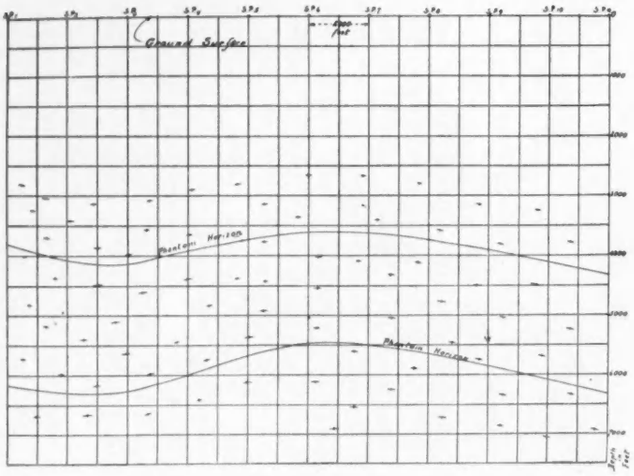

FIGURE 7

.015 sec. is observed; obviously this means that a dip is present in the subsurface and that the image of the shot point remains unchanged. Thus the amount of dip is obtained by the angle made with the vertical and the line joining S.P. image and S.P.'.

The actual use of the chart, Figure 5, is quite simple. The total time at which a well defined reflection occurs on the record is noted and the corresponding total time curve is marked. The step-out time, as observed on the reflection, is calculated and the shot point location is plotted to scale on the diagram. This point is joined by a straight edge to the step-out time reading on the total time curve at which point a perpendicular is drawn which gives in position and dip the accurate location of the reflecting bed.

Perhaps an example will demonstrate better the procedure in handling the dip chart. Nomographs of this kind are made for a definite spread, say a thousand feet between extreme geophones and a given velocity gradient. The shot point distance is however immaterial and we shall assume a thousand feet to the first geophone. A negative step-out time of .025 second is obtained for a total overall time of 1.5 seconds. A straight edge and a triangle are represented on Figure 5 corresponding to this actual case. Since the step-out is negative, it is read on the half chart opposite to S.P. The triangle gives the position and dip of the reflecting horizon. It is to be noted that the amount of dip is obtained at the point on which the reflected energy actually impinges on the reflecting horizon and that the off-set as well as depth and dip are obtained. This chart furnishes then an accurate solution of the problem, its disadvantage however being that it is not universal.

In actual practice charts are drawn on cross-section paper to the same scale as the geologic cross-section. The latter is drawn on transparent cross-section paper and displaced over the dip chart according to the location of the profiles; reflecting horizons are drawn directly by transparence. Figure 7 represents an actual geologic cross section obtained by this method, the small lines representing dips and positions of the different reflecting horizons. On account of the lenticularity of the beds reflections are not obtained on a continuous horizon but a phantom horizon can be drawn which represents the configuration of the subsurface structure.

The field procedure followed consists in making long profiles (closed on themselves) in the region to

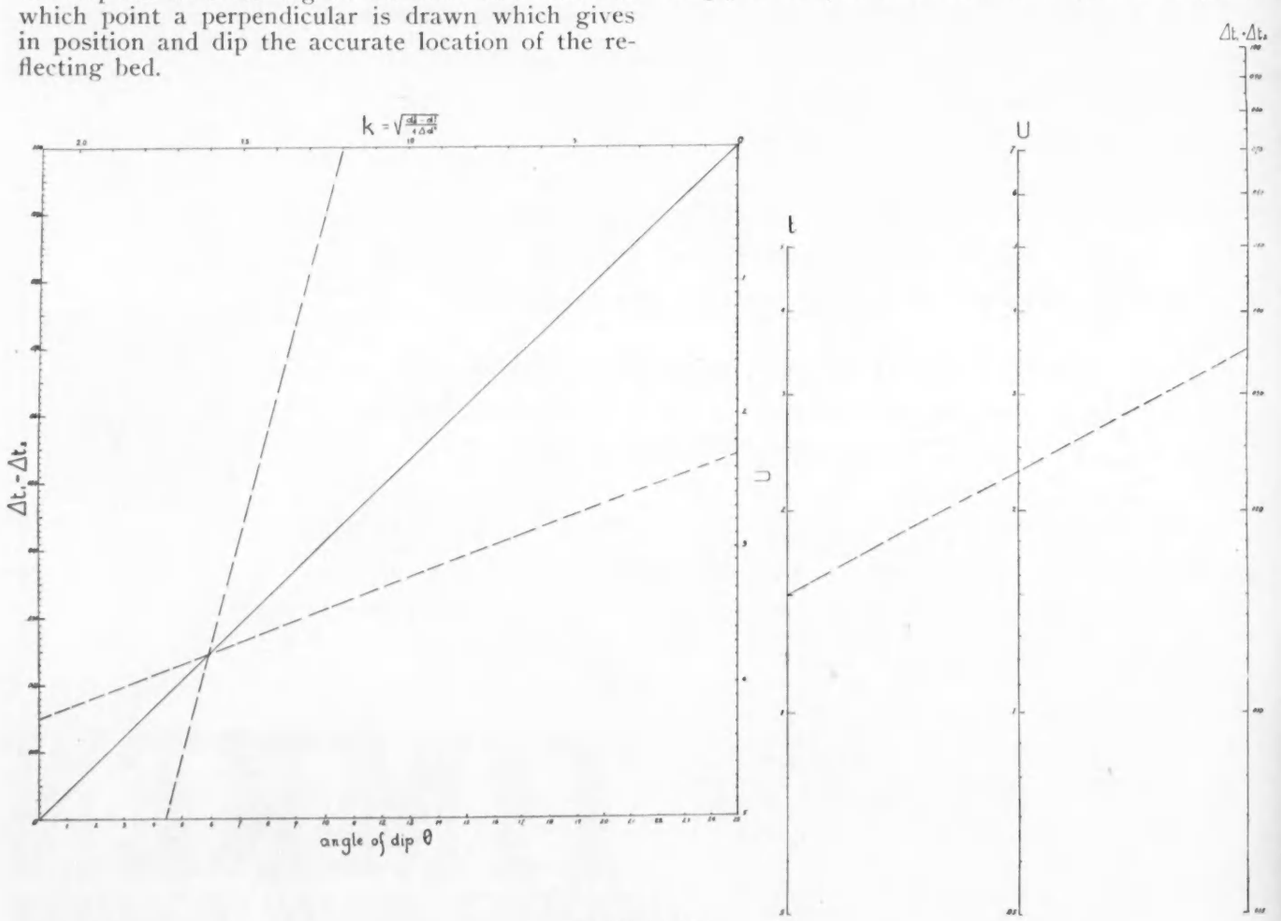

FIGURE 9

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Thirty-five sacks of Unaflo were pumped into the seven-inch casing between two rubber plugs. Pressures up to 2400 pounds were used. Here's a record of the time:

Mixed 35 sacks	**22 minutes**
Pumping cement in casing	**4 minutes**
Put in follow plug	**7 minutes**
Pumping plug to 6,245 ft.	**5 hrs. 5 min.**
Total Time	**5 hrs. and 38 min.**

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be surveyed. A series of phantom horizons for different depths are drawn. Several causes of errors are present; they are the following:

1. Error of closure.
2. Wash-boarding.
3. Side-swipe.

The error of closure is the amount in feet that the phantom horizon misses when coming back to the starting point of the survey. This error is usually distributed uniformly over each depth determination for lack of better way of error distribution. The closure error is due mainly to "wash-boarding" and "side-swipe." Reflecting horizons determined by the chart are apt to show irregularity of dips or a wash-board effect which is due to inevitable errors in reading the step-out times, in making weathering and elevation corrections and to interference with wind disturbances and oscillations of near surface beds. Side-swipe produces a relatively small error in gently folded regions due to the fact that the reflections do not occur in a vertical plane passing through the spread but slightly sideways. For a bed dipping 10° the side-swipe errors obtained for reflection profiles making an angle θ with the strike are given in the following table:

θ	Errors in dip
0	0° 0′
30°	0°20′
45°	0°30′
60°	0°20′
90°	0° 0′

One sees that for a profile parallel or perpendicular to the strike no error is made whereas the maximum error is obtained when the two directions are at 45°. Consequently it is unjustified to distribute the side-swipe error uniformly on all the reflection points. For beds dipping very steeply, side-swipe errors become so considerable that it is necessary to resort to other methods of dip calculations.

Universal Dip Charts

On account of the limitations placed on the generality of the dip chart represented in Figure 5 some simple formulae were sought which would permit the calculation of subsurface dips for any given spread and distances between the extreme geophones. It is however necessary to resort to some type of approximation in order to achieve the aim. The simplest type is represented by the following formula:

$$\alpha = \text{arc sin } \frac{\Delta t \cdot V}{\Delta x} - \text{arc tan } \frac{X}{2Z} \qquad (1)$$

where α is the angle of dip
Δt is the step-out time
V is the overall velocity to the reflecting bed
Δx is the spread length
X is the distance from the shot point to the middle geophone
Z is the depth of the reflecting horizon.

On account of the approximation included in formula (1) the depth Z which enters it may be obtained (without introducing any undue further error) from the product of the total overall time by half of the velocity to the particular bed.

Formula (1) can be represented by a calculation graph as indicated in Figure 8. An actual example will illustrate the use of the chart:

$\Delta t = .035$ second
$V = 10{,}000$ feet/sec.
$\Delta x = 1000$ feet.
$X = 1500$ feet
t (the overall time) $= 1.2$ seconds.

.035 is read on the Δt axis and a horizontal line followed from it until it meets $\Delta x = 1000'$. The point is noted and a vertical straight line is drawn until it meets with the 10,000 feet/sec. velocity line, from which intersection a horizontal straight line is drawn to the $\frac{\alpha + \beta}{2}$ axis. Z is approximated from $VT = 10{,}000 \times \frac{1.2}{2} = 6000'$ and a vertical drawn until it meets with the X line marked 1500′, a horizontal is drawn from the intersection and an angle β is read. The difference between the two readings $\alpha + \beta = 24°$ and $\beta = 7°10'$ gives the angle of dip: 16°50′.

Although this chart is universal it has some limitation of depth, the accuracy of the dip determination being considerably reduced for shallow formations and steeply dipping beds.

Another drawback of the preceding chart is that a knowledge of the overall velocity of transmission of the elastic wave is required. In virgin territory where no knowledge of such velocities is obtainable without proceeding to some expensive and slow refraction shooting it is a great asset to have at hand a formula which gives the value of the dips of the subsurface formations without velocity determination. This is provided by the following formula:

$$\theta = \text{arc sin } \sqrt{\frac{d_2^2 - d_1^2}{4\,\Delta d^2}} \cdot \frac{\Delta t_1 - \Delta t_2}{\sqrt{t(\Delta t_2 + \Delta t_1)}} \qquad (2)$$

in which
θ is the angle of dip
d_1 the distance from the shot point to the first geophone
d_2 the distance from the shot point to the last geophone
Δd the spread length
Δt_1 the step-out time for the direct shot
Δt_2 the step-out time for the reverse shot
t the total overall travel time.

In the above formula the velocity of transmission does not appear but it is necessary to shoot each spread in two opposite directions from shot points symmetrical with respect to the center of the spread. Formula (2) is furthermore based on an approximation and it is of interest to know the amount of error made by its use and how the error varies with the increase in the amount of dip in the subsurface. A practical case has been investigated for the following conditions:

$X = 1000$ feet
$\Delta x = 1000$ feet
$Z = 5000$ feet
$V = 10{,}000$ feet/sec.

The exact step-out times have been calculated for varying degrees of dip and for down- and up-dip shooting. The results are summarized in the following table:

θ Actual dips	Dips computed from formula (2)	Errors
10°	9°52′	−8′
20°	21°4′	+1°4′
30°	35°	+5°

It appears that the accuracy of formula 2 decreases rapidly as the angle of slope exceeds 20° and when making dip determinations over shallow formations.

For practical use, formula 2 may be graphed into an alignment chart such as represented in Figure 9, the handling of which is simple and foolproof. The summations $\Delta t_1 + \Delta t_2$ and $\Delta t_1 - \Delta t_2$ are made, Δt_1 being always positive since it is the down-dip step-out time whereas Δt_2 may be positive or nega-

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tive depending on the amount of dip. An example will illustrate clearly the use of the dip chart.

Let $\Delta t_1 = .025$ second
$\Delta t_2 = .010$ second
$t = 1.5$ second

$$k = \sqrt{\frac{d_2^2 - d_1^2}{4\,\Delta\, d^2}} = 1.2$$

Thus: $\Delta t_1 + \Delta t_2 = .035$ sec. and $\Delta t_2 - \Delta t_1 = .015$ sec. The points $t = 1.5$ and $\Delta t_1 + \Delta t_2 = .035$ are noted on their respective axes and they are joined by a straight line the intersection of which is read on the U axis and gives .23. This value is transferred to the U scale on the right hand side of the square, the point .23 is noted and joined to $\Delta t_1 - \Delta t_2 = .015$ sec. The intersection with the diagonal of the square is marked and joining this intersection by means of straight line with the value of $k = 1.2$, the angle of dip $\theta = 4°20'$ is read on the lower side of the square.

Correlation Dip Shooting

When the subsurface slopes are considerable it is necessary to take into account the side-swipe effect that is, to compute the depth and location of the reflection points as well as the dip of the formations themselves. This can be achieved by shooting in three directions (preferably at right angles) from a shot hole assuming that correlation between the three records is possible. Let us assume that the three spreads a (Figure 10) have identical dimensions and that the overall travel times are T_1, T_2 and T_3 after the customary weathering and elevation corrections but without spread correction. Let us consider Figure 10 where 1, 2 and 3 are the centers of the different spreads. When shooting in the direction 1 the locus of the image of the shot point is on a sphere of center 1 and radius VT_1 where V is the velocity of transmission of the elastic wave. Similar considerations can be made for directions 2 and 3 and the image of the shot point can be determined without ambiguity by the solution of three simultaneous equations representing spheres of centers 1, 2 and 3 and radii VT_1, VT_2, VT_3. These equations are the following:

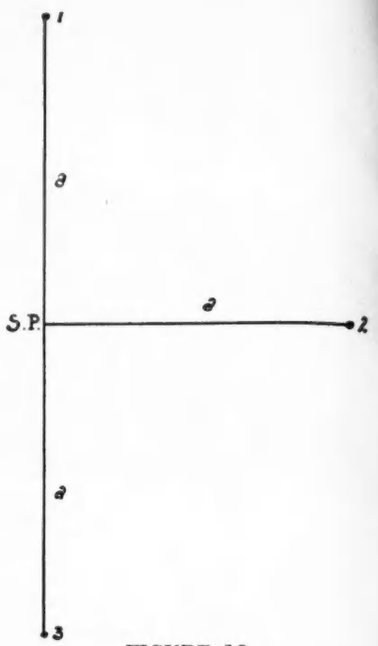

FIGURE 10

$$\begin{aligned} (x-a)^2 + y^2 + z^2 &= (VT_1)^2 \\ x^2 + (y-a)^2 + z^2 &= (VT_2)^2 \\ (x+a)^2 + y^2 + z^2 &= (VT_3)^2 \end{aligned} \qquad (3)$$

where x, y and z are the coordinates of the image of

S.P. No..... Location.....

a = 1000 feet

V = 10,000 feet/sec.

		TV	T^2V^2	$(T_3V)^2 - (T_1V)^2$	$(T_3V)^2 - (T_2V)^2$	$x = \frac{(T_3V)^2 - (T_1V)^2}{4a}$	$x+y = \frac{(T_3V)^2 - (T_2V)^2}{2a}$	$y = (x+y) - x$	$Z = \sqrt{(T_1V)^2 - y^2 - (x-a)^2}$	$\tan\alpha = \frac{\sqrt{x^2+y^2}}{Z}$	α
T_1	.825	8250	68×10^6								
T_2	.800	8000	64×10^6								
T_3	.775	7750	60×10^6	-8×10^6	-4×10^6	2000'	2000'	0	8180	.1225	23°

Coordinates of the reflection point

$\frac{x}{2}$ = 1000 feet

$\frac{y}{2}$ = 0

$\frac{z}{2}$ = 4090 feet

Angle of dip α = 23°

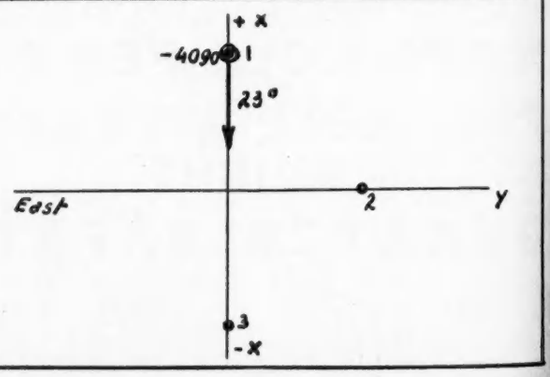

FIGURE 11

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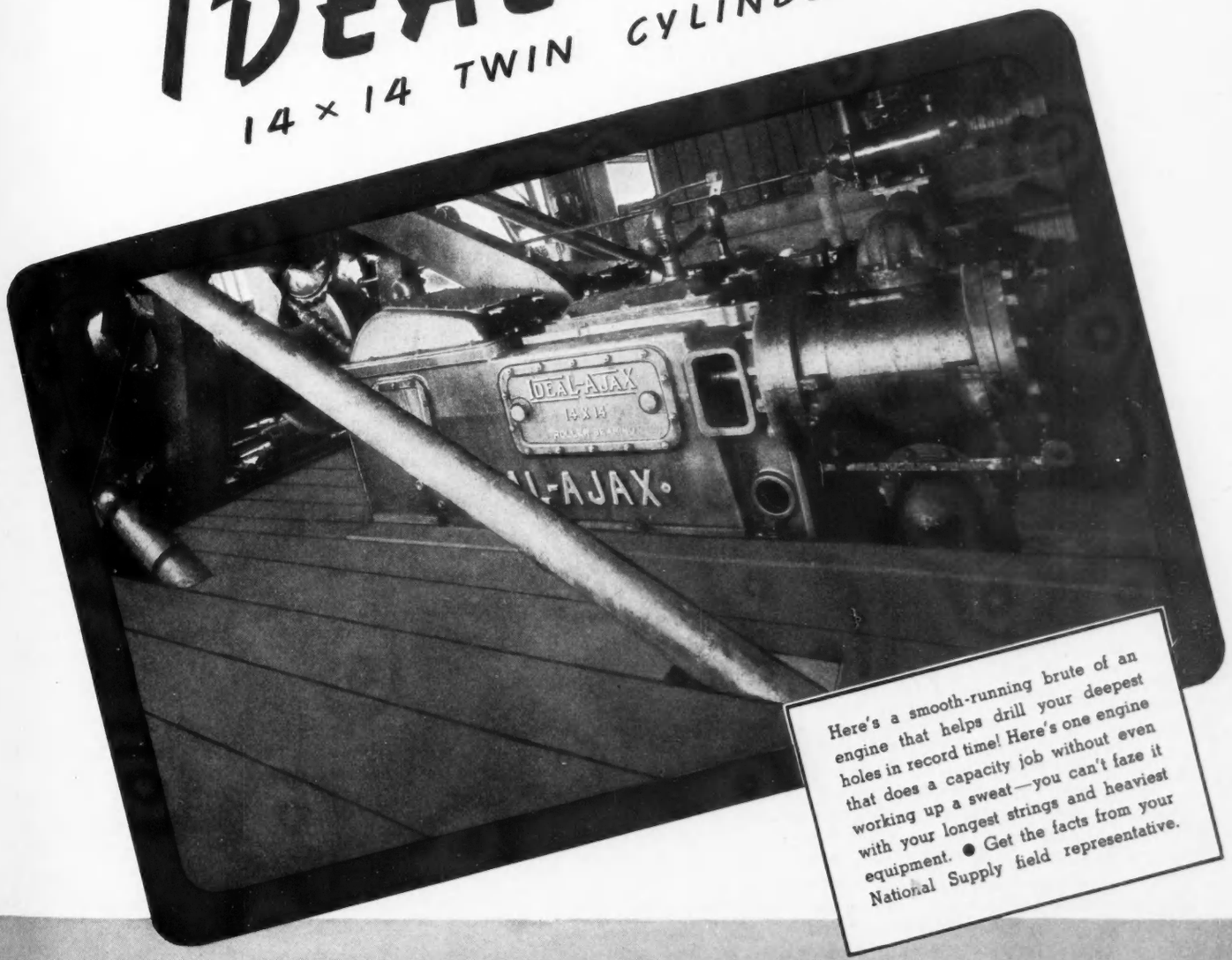

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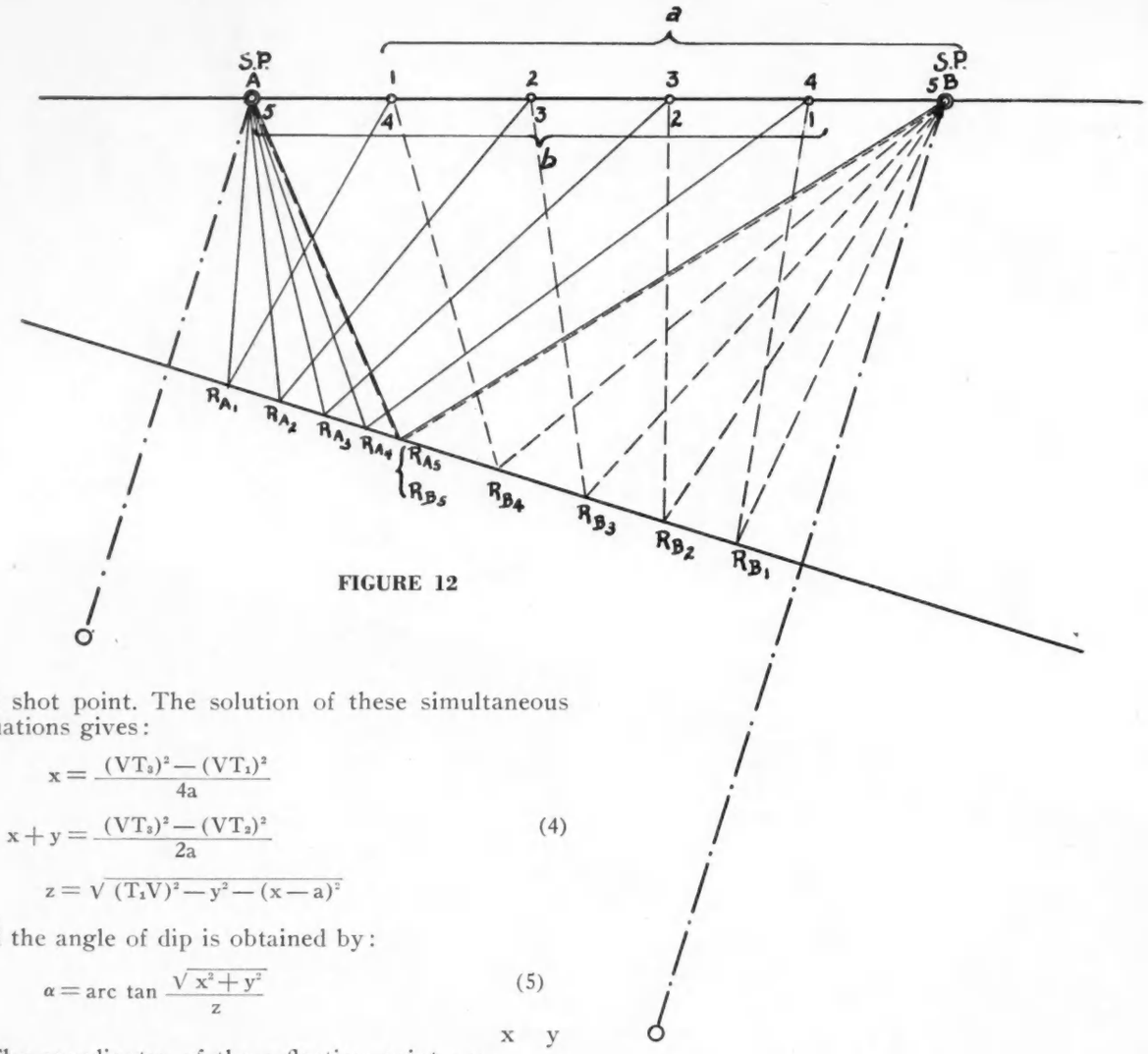

FIGURE 12

the shot point. The solution of these simultaneous equations gives:

$$x = \frac{(VT_3)^2 - (VT_1)^2}{4a}$$

$$x + y = \frac{(VT_3)^2 - (VT_2)^2}{2a} \qquad (4)$$

$$z = \sqrt{(T_1V)^2 - y^2 - (x-a)^2}$$

and the angle of dip is obtained by:

$$\alpha = \text{arc tan } \frac{\sqrt{x^2+y^2}}{z} \qquad (5)$$

The coordinates of the reflection point are $\frac{x}{2}$, $\frac{y}{2}$ and $\frac{z}{2}$. From the point of coordinate $\frac{x}{2}$ and $\frac{y}{2}$, the direction of maximum dip passes through the shot point; thus the bed can be plotted on the map with dip, strike and depth from the surface. An example of computation is given together with a suggested calculation form in Figure 11.

Continuous Profiling

The dips of the subsurface formations can also be obtained by continuous development of the geophones in straight or curved lines on the surface of the ground with one or two reflection points overlapping in each spread. This procedure is made clearer by the representation on Figure 12 of the rays travelling through a cross-section of the subsurface. Two shot points A and B are chosen and geophone spread *a* has its last geophone located at shot point B whereas spread *b* has its last geophone located at shot point A. Image points A′ and B′ necessary in drawing the paths of the reflected rays are also represented together with the reflection points $R_{A_{1,2,3,4,5}}$ for the spread *a* and $R_{B_{1,2,3,4,5}}$ for the spread *b*. It is noticed that the reflection points R_{A_5} and R_{B_5} are identical. Consequently, the calculations of the depth of this point from A or B must give the same figure. Corresponding depth points for the last geophones of overlapping spreads should always be found on satisfactory seismic work of this type and when the records are of a good quality correlation from geophone to geophone is an easy matter, especially if one takes pain to operate elevation and weathering corrections for each geophone. Other similar spreads are taken adjoining shot points A and B. It is then necessary to correlate across shot holes, which may not be an easy matter on account of the shattering of the near surface formations by the explosion. It is possible however to avoid this drawback by overlapping spreads across the shot hole.

Without doubt, continuous profiling gives excellent results and close control of the subsurface strucsures but it is a slow and consequently expensive procedure, and it is the present practice to resort to it in very complicated structures only, or where a detailed survey is desirable.

Acknowledgment

The author wishes to express his thanks for valuable suggestions received from G. H. Westby, president of the Seismograph Service Corporation of Tulsa, Josiah Taylor, consulting geophysicist at Shreveport, and Dr. H. M. Krutter, research assistant in Petroleum and Natural Gas at the Pennsylvania State College.

INTERRELATIONSHIP OF

Geology and Geophysics

By O. L. BRACE, Consulting Geologist

This article, which is reprinted from the February, 1937, bulletin of the American Association of Petroleum Geologists, presents the geologists side of the question regarding geology and geophysics—their interpretation and interrelationship. At the annual meeting of the American Association of Petroleum Geologists, March 17-19, 1937, at Los Angeles, Dr. L. W. Blau presented a paper showing the geophysicists viewpoints (published in The OIL WEEKLY, March 29, 1937). At the conclusion of the accompanying article, Brace has prepared a discussion of Dr. Blau's paper.

THE recent phenomenal development of geophysics as a factor in the search for new oil reserves leads to the following questions. Is the petroleum geologist, in that particular department of his work that deals with structural prospecting, to take a position of secondary importance to the geophysicist, or is geophysics to be regarded as another tool, which the geologist may utilize to solve his problems more effectively? These questions are brought to mind by the apparent present-day tendency of geophysics to dominate, in certain provinces, the field of oil finding.

In a review of the new fields found during the past few years, it is impressive to note the widespread discovery claims of the geophysicist. The geologist, regardless of the degree of his participation, is seldom mentioned nor is the application of the principles of geology outwardly credited with having been an important factor in bringing about these successes. The uninformed observer, and this class may be said to include many men active in petroleum exploration, may arrive at the conclusion from this that in the search for new petroleum supplies, geologists have been definitely relegated, in many areas, to a position decidedly secondary in importance to geophysicists. It is the purpose of the writer to consider the function of these two groups and to analyze their relationship.

Technique of Structural Prospecting

In the early days of petroleum geology, the search for oil and gas was mainly confined to regions in which consolidated rocks permitted a relatively simple structural interpretation through a study of surface formations. During a period of intensive study covering approximately 30 years, practically all the more obvious uplifts have been mapped and tested by the drill. Early in this period, structural study was carried beneath the surface by means of well logs and a knowledge of general structural conditions has thus been extended into areas where poor exposures and unconsolidated sediments constitute a handicap to surface mapping. In certain areas where stratigraphic conditions justify, the acquisition of subsurface information has been augmented by use of the core drill, but normally, where well control is scattered, prospecting has been guided too frequently by insufficient structral information.

The progress of the technique of structural prospecting has followed a more or less orderly sequence. Structural study and subsequent drilling and discovery have begun with the obvious type of trap and have progressed to the obscure type, with new methods of solution being developed as necessity dictated. When the anticlinal theory first gained a wide following, the search for structures was confined to simple types that would fit a simplified theory. The complexity of structral forms under which oil and gas may accumulate was not recognized until this wide diversity was brought to light in the natural progress of oil field development.

With the gradual elimination of obvious structures in areas in which preliminary surface and subsurface study is possible, the necessity arose for a method by which deep-seated structural conditions could be appraised in the absence of surficial criteria. This necessity was met by the adaptation of known geophysical methods to this purpose.

Introduction of Geophysics

The Gulf Coast area has constituted the proving ground for geophysical methods. The torsion balance and the refraction seismograph, aiming directly toward the detection of the salt core that lies beneath the arched sediments of the typical salt dome, were introduced because it was obvious to the geophysicist and seismologist that they should have a capacity for isolating such salt masses. During the first few years of operation, the effectiveness of these methods was such that virtually all of the shallow, piercement type domes were located, together with several domes in which the intruded salt mass lay at greater depths. Their effectiveness, however, decreases rapidly with depth, due to the increased generalization in the character of the records; and the reflection seismograph, which does not incorporate this limitation to as marked a degree, was introduced and took the lead in the field of geophysical exploration.

After such a successful introduction on the Gulf Coast, the use of geophysics was extended out into other regions. The refraction seismograph was found to be a successful detector of arched sediments in areas where massive hard members occur in the section and the torsion balance, under similar conditions, was used with fair success. The torsion balance,

despite its limitations, continues to occupy an important place on the Gulf Coast as a reconnaissance instrument. It has the advantage of speed and economy and it has furnished a background that has pointed to many domes that have subsequently been detailed by reflections. The reflection seismograph, however, has an adaptability that the other instruments lack, and it is being operated, with varying success, wherever petroleum exploration is being prosecuted on a large scale. In the absence of detailed surface or subsurface geology, it is considered the final appraiser of structural conditions.

Of the geophysical methods discussed, the data to be derived from the records of the reflection seismograph more nearly approximate actual structural elements than do those furnished by the other two. An anomaly discovered by the torsion balance can not, without additional information produced by other means, be attributed to any unique geological structure. The anomaly merely indicates that a body, differing notably in specific gravity from the surrounding rocks, lies somewhere near, below the site of the anomaly, or that if the body be a stratum, it is thicker or thinner, shallower or deeper, at that point than normally. The intensity and shape of the anomaly are functions of the relative specific gravity, depth, size, and shape of the structural body which causes it, and because these four variables can not be determined individually with the torsion balance, but only their sum total effect, unsupplemented torsion-balance data can be converted into structural terms only empirically by comparison with similar anomalies in the same region, the structural source of which is known.

Similarly with the refraction seismograph, even under the most favorable circumstances, only the velocity with which sound waves are propagated in hard beds can be determined. If there are several hard beds, successively deeper, it is usually true that the mapping of dip and strike, and the determination of faulting, can be done by the refraction method, only as to the shallowest of these, and only in special cases can similar information be obtained of the deeper hard beds.

It is also a limitation of this method that the distance between shot-point and recorder on the surface is large compared with the depth of the hard bed being mapped, usually four times as a minimum. This means a much greater expense than for the reflection seismograph, and also means that errors in computation are introduced if there are variations in the velocity of the beds above the hard one being mapped. The reflection seismograph, on the other hand, determines directly the structural attitude of the arched sediments that comprise the uplifted area over distances as short as may be desired, and regardless of whether correlation or slope method is being applied, the results need no conversion in order to be directly utilized for structural interpretative purposes. That is true in the same sense as are the points on the correlating datum established by the subsurface geologist from a study of well logs or the dips recorded in the field by the reconnaissance geologist.

Torsion Balance and Refraction Seismograph

This paper is written from the viewpoint of the geologist, and the discussion of the basic principles of geophysical methods has been carried only so far as is necessary to clarify the relationship that is under discussion. The particular manner in which the principles of geology are directly applicable to the interpretation of geophysics varies with the type of instrument in use. The torsion balance operator deals with abstract physical factors and in the presence of a gravitational anomaly he does not say, "here is a structure," but rather, "here is evidence of gravitational irregularity that may be due to structure." The results of such surveys when placed on the map, are not intended to convey a direct structural message, but, as has already been said, they may be compared with other anomalies, in the same region, whose structural source is already known, for an establishment of indirect structural valuation. In a similar sense, the refraction seismograph, in recording the time required for sound to travel between certain points through the earth's crust, registers any radical change in the rate of speed that would indicate a variation in the composition of the conveying medium along the path of the sound wave. This may, in turn, signify the presence of salt or of arched sediments, according to the character of the record. In borderline cases, that is, in cases of only slight refraction "leads," and in cases of deeply penetrating shots, there is always the possibility that the higher velocity may result merely from the compaction of the sediments due to structure building and that such structures may be anticlines, synclines, fault zones, or even mere monoclines of steeper than normal dip. In any event, the inference that abnormally high velocities necessarily indicate favorable structure can not be drawn without first having appraised all of the numerous geologic factors that have a direct bearing on the problem.

Reflection Seismograph

Correlation method.—The contributions of the geologist form an indispensable background to the proper interpretation of torsion balance and refraction seismic data and he assumes a role of even greater importance in connection with the reflection seismograph. This instrument operates by passing a sound pulse, created by a dynamite explosion, into the earth and recording the time in which it is reflected back to the surface. The reflecting media are certain surfaces contained within the deeply buried stratigraphic section. It is apparent from this that stratigraphy enters the problem as a basic factor, since the capacity of certain parts of the lithologic section to act as consistent reflectors constitutes the gauge of the value of the resulting records. If the subsurface section is made up of alternating hard and soft members in which definite characteristics of lithologic nature and hardness persist laterally for considerable distances, then it is possible to employ the correlation method of shooting. Under these circumstances and by this method, certain groups of beds that may be referred to as reflecting constants, are recordable throughout broad areas, and by reducing time records to feet, depths to such datum horizons may be placed on the map and contoured as in ordinary subsurface mapping. In the absence of the particular lithologic type that is basically essential to correlation shooting, the slope method is employed.

Slope method.—The sediments that comprise some of the thicker segments of the stratigraphic column, were laid down under shore-line conditions where rapid advances and retreats of the sea and strong and irregular cross-currents resulted in the continual reworking of materials in the processes of deposition. These depositional influences have produced a section in which but few members maintain a lateral lithologic unity. Such

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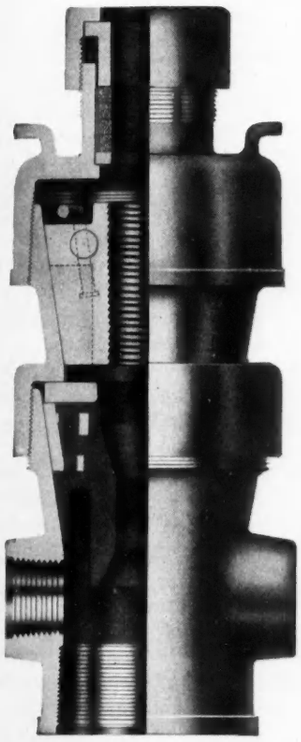

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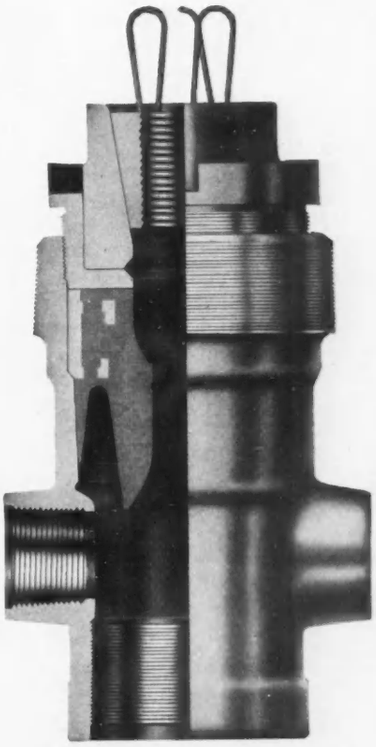

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is the character of most of the later Tertiary sediments of the Gulf Coast. In parts of this region, as well as in other regions of similar type, the variable lithologic character is, in most places, an effective barrier to the use of the correlation method. In its place, the slope method has been perfected and is in general use and, though the results to be obtained with slopes are much less satisfactory than with correlations, the method is bing used very effectively to outline, in a general way, numerous favorable structural areas.

When slope shooting is employed, each shot-point, with its detector system, furnishes a record that is, in theory, a localized unit in the system of structural control. This is true because the reflecting beds may be scattered throughout a vertical section with a thickness of 10,000 feet or more and it is improbable that any unit group of beds will consistently record from one station to another.

Upon completion of such a survey, the preferred practice is to construct slope profiles covering each independent traverse. These profiles present a balanced picture of slope conditions and permit an appraisal of localized conflicts that tend to confuse structural interpretation. As a second step, the slopes are placed on the map, with definite footage values assigned to the distance covered by the individual reading. These latter data make it possible to accomplish a direct reduction from recorded slopes to structural contours. In this reduction process, it is obviously difficult, in the absence of a common correlating medium, to tie the various traverses together, but this does not constitute an important handicap except in the presence of major faulting.

Delimitation of faulting.—In areas characterized by complex fault patterns, recognition and delimitation of faults is not ordinarily difficult where correlations may be employed. If one or more groups of datum beds are present throughout a detailed survey, faults may, under some conditions, be rather accurately mapped, both as to position and as to amount of displacement. The situation described is, of course, a more or less ideal one. It is true, nevertheless, that a correlation survey may be fairly accurate in this department, under favorable circumstances. With slopes, however, faults constitute one of the most difficult phases of interpretation. This difficulty is easily understood when it is pointed out that in the records of a given profile, only chance reflectors may record at random throughout 5,000-10.000 feet of vertical section and, an almost complete absence of a common datum through which vertical orientation may be accomplished, one or more faults may exist without leaving sufficient evidence of displacement to afford recognition.

Stratigraphic Aspects

It has been pointed out that in the operation of the seismograph, the velocity of the sound pulse varies with the character of the medium through which it travels. Thus, sound travels through compact shale with higher velocities than through porous sand. Heavy, porous limestone, such as coquina, conveys sound with relatively low velocities, whereas limestone that is tightly cemented ordinarily serves as a high velocity conductor.

Since the velocity of sound is the basis of measurement with the seismograph and since such velocities are variable in keeping with the lithologic medium through which they travel, changes in velocity due to unanticipated changes in the composition of the stratigraphic section may introduce errors in calculating relative depths to significant reflecting horizons. A good example of this effect is found at Smackover, Arkansas. In this field, the sands within the productive zone grade from a thick, relatively pure sand phase on the crest of the dome to shales off the flanks. Theoreticaly, since the velocity of shales is somewhat higher than that of sands, a seismic survey of this dome, without proper correction for such lithologic change, might furnish a structural conception to be interpreted as a depression instead of an uplift.

Increased velocities that result from lateral changes in lithologic character are ordinarily observable in domal areas on the Gulf Coast and in structral areas elsewhere. They are observed to occur along seismic lines that penetrate areas of folded rocks and may arise from the compaction produced by localized structural movement. Without proper correction, these increases tend toward a false accentuation of the degree of structural dip.

Under shore-line conditions, there is normally a depositional change from shallow-water deposits along the inner margin of deposition, to deep-water deposits away from this margin, and the direction of the lines along which such orderly changes in facies occur is predictable as a result of a paleogeographic study of the region. Such gradations in lithologic type introduce rather pronounced changes in average velocities in certain districts. Considered from a regional standpoint, these changes are more or less gradual and regular, but locally, limestone stringers or other hard members may be introduced and these can result in records that may lead to erroneous conclusions within the localized survey. This is particularly true under conditions where sand stringers or highly lenticular sand zones have been developed parallel with old shore lines. In places a change in lithologic facies along the updip margin of a regional structure may be such as to furnish high speeds that obliterate existing subsidiary anticlinal closure from the records. It is true, of course, that the effects here described constitute a more important factor in areas of minor closure than in those of major closure.

In many areas, there takes place a regional wedging of prominent stratigraphic units that produces the type of influence that is under discussion. Such changes exist in the Comanche series on the flanks of the Sabine uplift. In a given section, there may be a lateral wedging-out of a low-speed segment, accompanied by a wedging-in of a high-speed segment. Such a lateral shift of the composition balance of the section tends to changes in velocity so that an actual regional steepening in dip might be interpreted as a pronounced regional flattening.

If proper allowance is not made for their presence, major unconformities may also be a factor in changing velocities and can result in radical misconception as to the significance of geophysical data. Such unconformities may also produce stratigraphic pinch-outs, but the convergence of reflectors that would indicate the presence of such phenomena may or may not be subject to proper interpretation in the absence of a detailed knowledge of stratigraphy.

The foregoing illustrations are only a few of those that might be cited to show the important influences exerted by stratigraphic change on the interpretation of geophysical investigation.

Regional Structural Aspects

The function of the geologist in relation to the solution of structural problems begins first with a consideration of the regional structure. It is a matter of common geological knowledge that, throughout most of the petroliferous provinces of the country, folds and faults that are the product of regional crustal adjustments tend to arrange themselves, in their relation to one another, into

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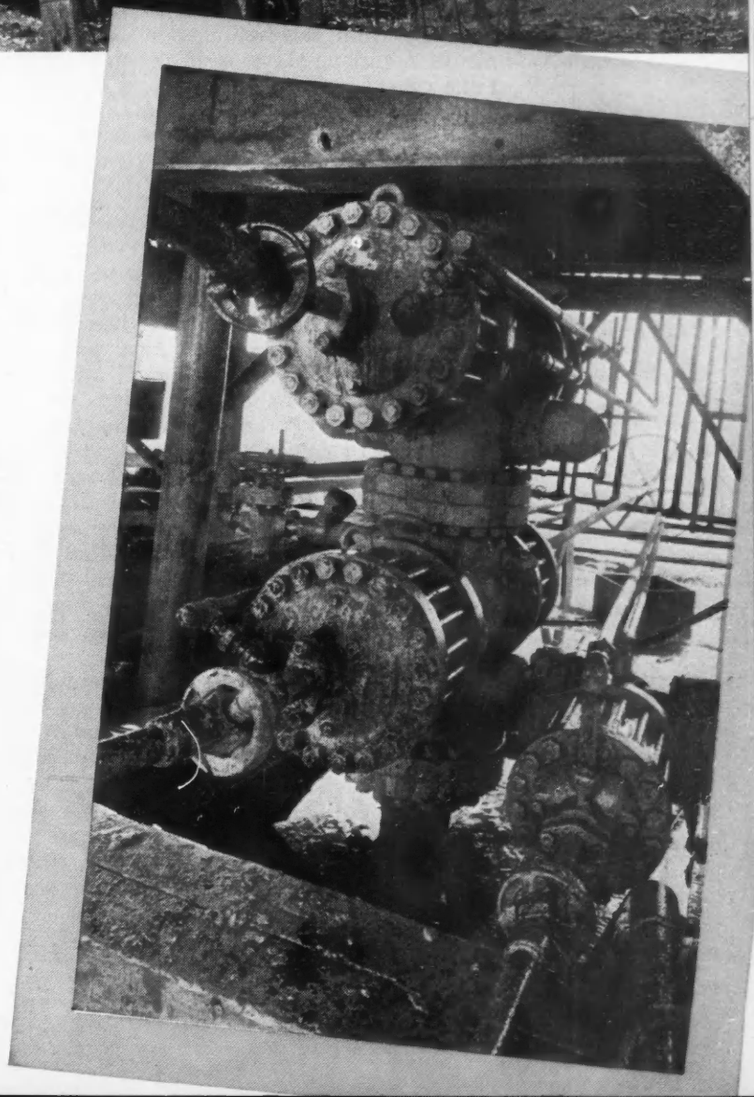

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more or less regular patterns. The character of such patterns varies between provinces, according to the local alignment of the major features that control crustal movements. Thus, in intermontane areas and along mountainous coast lines, structures characteristically occur along lines that are directly related to the axes of the mountains: in major basins, structures occupy trends that are established in conjunction with major lines of weakness in the basement rocks. In the Balcones fault system, which extends across the state of Texas for a distance of 500 miles, the main zone of fracturing occupies a line that nearly parallels the old coast line and the individual faults, lying *en echelon,* parallel one another at small angles to the line of direction of the zone. Such an arrangement is also characteristic of fault systems in other regions. The recognition of the influence of such regional affects upon structural arrangement is important, especially in its bearing upon structural interpretation.

In the salt-dome areas of the Gulf Coast and of the regions surrounding the Sabine uplift, no such characteristic regional arrangement of structures is readily discernible. The structures that typify these areas have resulted from the upward movement of salt plugs arising presumably from deeply buried salt masses and this movement, which may have been brought about through the action of crustal adjustments, is not thoroughly understood. Complex fault patterns characterize a great many of these salt structures, particularly those that affect the young sediments of the Gulf Coast proper. These faults are localized within the immediate area of uplift and are the result of the intensive upthrusting action of the salt, with no direct relationship to regional influences. It is true that in the southwestern part of the immediate coastal region, there is evidence of a major line of weakness that parallels the coast line, along which occurs a trend arrangement of structures that may have resulted from salt action along a regional fault system. In addition, there is evidence in other localities of the coastal region of Texas and Louisiana that regional faults may have influenced the pattern of structural development. With our present limited knowledge, however, such instances may not be considered typical of coastal conditions.

Local Structural Aspects

Just as the structures that are the product of regional movement ordinarily occur in a relationship to one another that is generally predictable, so do individual structures assume forms that are characteristic of the local phase of the regional forces that have produced them. This statement is, of course, a generalization and is intended to convey the idea that in any given region, structures are the product of forces that tend to produce, locally, a certain type of fold. Illustrations that follow have been selected from areas with which the writer is most familiar. In intermontane areas, for example, some of the folds occur along trends, paralleling the axes of the mountains. Also, the individual folds within such trends incorporate features that show a general degree of structural uniformity. This uniformity may apply to axial direction, general form, degree of symmetry, and direction of faulting.

In the Permian basin area of West Texas and New Mexico, traps that serve to accumulate oil and gas may be classified in one of two or three distinct types. On the west side of the central platform, such traps have been formed by a combination of folding and deposition. They occur along well developed trends and their essential physical characteristics may be anticipated in advance of drilling. Within the platform area, folds assume, in the main, an orderly arrangement along regional lines. In individual detail, these folds are similar to one another, with the same directional asymetry and with a predictable axial orientation.

There is no intention to convey the idea that all structures in the Permian basin, or in any other province, show a similarity in their individual characteristics, but merely that a sufficient number of them display a uniformity of development and relationship to create an outstanding type that reflects the forces that have been responsible for their development.

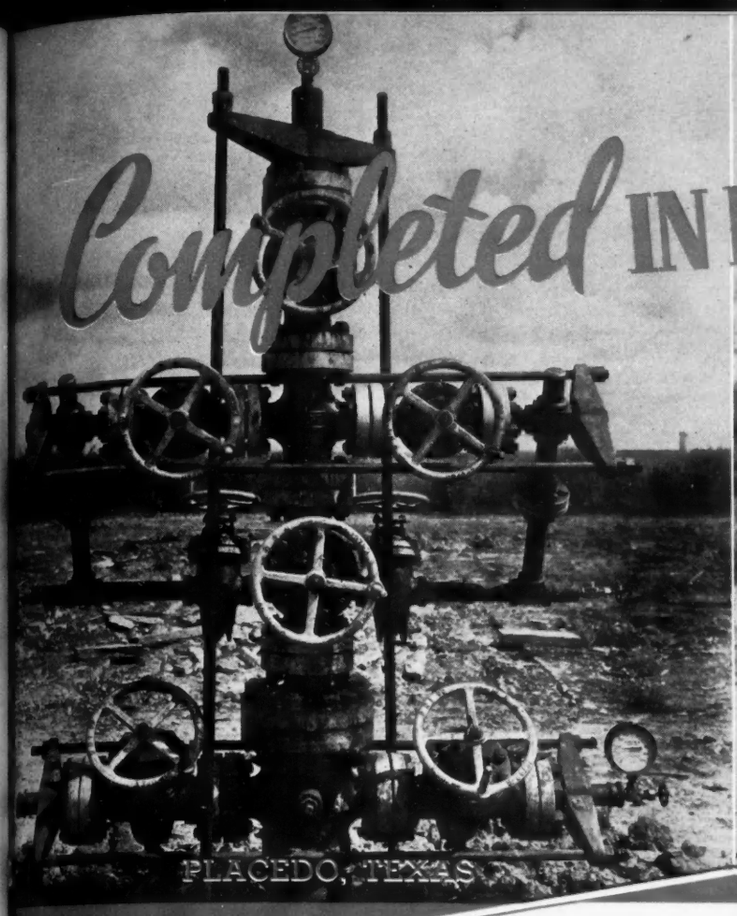
In the Gulf coastal region, the statements already made as to the interrelationship of structures may not so generally be applied. In the Laredo district of southwest Texas, oil and gas traps are largely products of deposition, although faulting may have constituted an important factor in some places. In the area adjacent to the coast, between Hidalgo and Jackson counties, structures do assume a trend arrangement and uplifts such as Saxet, Refugio, and Greta are the outstanding type for this locality. Associated with these type structures, there are fault traps that occupy a separate trend inland from the Refugio line of folding and, coastward, there are additional lines along which either typical folds or typical faults may occur. Under either condition, such structures are found to be limited to a very narrow group of types and to bear to one another a relationship that is characteristic of the region in which they occur.

Eastward along the coast, in the typical salt-dome regions of Texas and Louisiana, a background of structural knowledge is particularly valuable in solving the problems of advance structural interpretation. An effort has been made in the past to work out a regional structural pattern that would explain the interrelationship of domes. There has been a prevalent idea that domes have developed along lines of weakness that have resulted from regional adjustments but little concrete evidence has been advanced to indicate that such lines are of an orderly, predictable nature.

Although it is probable that the pattern of occurrence of coastal domes is a haphazard one, individual domes have a sufficient similarity one to another that they may be placed in a rather restricted group of types. Thus, piercement domes may be considered occupants of one class, in the sense that they are more or less of the same form. They may vary in size, in the degree of dip of the flanks and in the presence or absence of overhang but they all possess a more or less circular symmetry and their individual variations from type are only secondary to the preponderant similarities that characterize them.

An increase in the individuality of structural types becomes apparent when a study of deep-seated domes is undertaken. Here again, there is a large group, the members of which are somewhat uniform in structural form but in which individual characteristics are more pronounced. These domes, of which Hastings, Iowa, and Anahuac may be chosen as examples, are circular and are, in a sense, all of the same type, except for their fault patterns. As a matter of fact, it may be said that the fundamental domal form is normally altered solely through the agency of faulting. Such faulting is present, in varying degrees, in all deep-seated domes and it may take the form of simple faults, or of upthrown or downthrown blocks. Many domes are cut by a central graben with an axis at right angles to the major axis of the dome and by additional radial faults or radial grabens.

The intensity of fault movement may produce domes with little or with great distortion. Central grabens are known to have developed to such an extent that two widely separated productive areas occur on opposite sides of the dome. In such cases, the outlines of the uplifted area give the appearance of an axial anticline,



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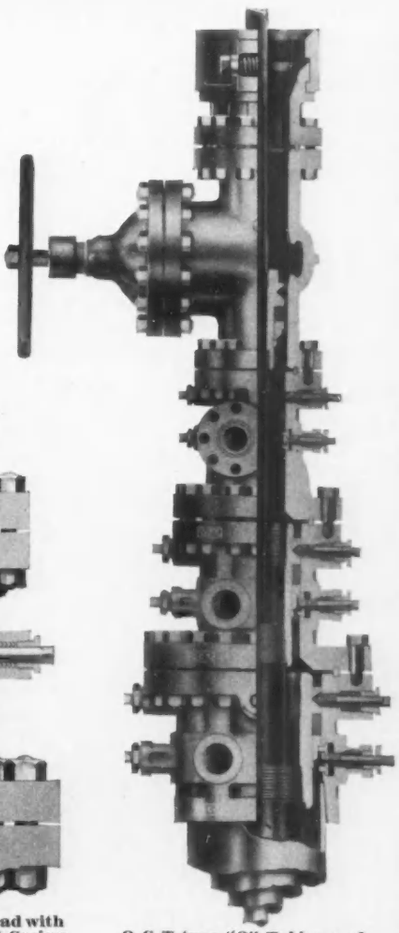

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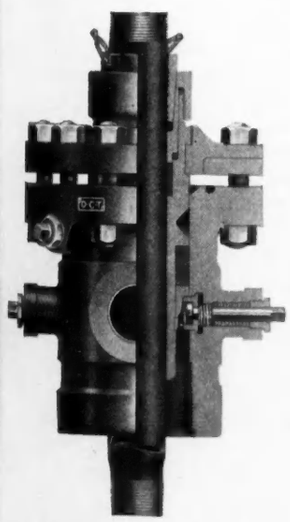
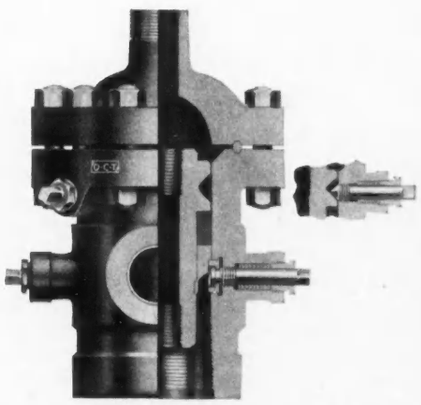
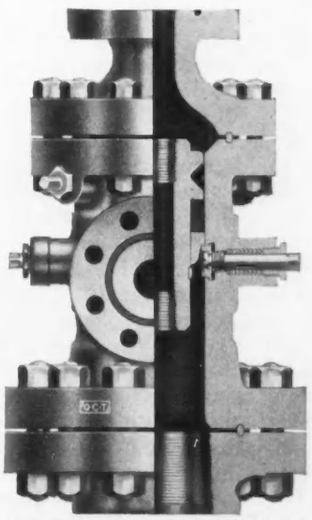


O-C-T type "Q-5" Tubing Head, having same body design as type "Q" but providing slips for suspension of tubing string.



O-C-T type "Q" Tubing Head with threaded connections for casing and Christmas-tree.



O-C-T type "Q-6" Tubing Head with flanged Christmas-tree and Casing Head connections, designed to fit O-C-T types "QB", "QC", "C-3", or "C-3-F" Casing Heads.

O-C-T type "Q" Tubing and Casing Head hook-up, showing tubing hanger passing through master gate valve.

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rather than a dome. Where the central graben is of minor development, both as to width and displacement of the block, there is little distortion in the form of the dome and no interruption to the distribution of production.

Besides the class of deep-seated domes here described, there is another class in which each member constitutes a separate structural problem. In this group, the uplifted area incorporates few of the structural features that have come to be recognized in connection with salt domes. Some of these traps consist of areas of minor closure on the downthrown side of faults. Others are structural noses in which updip closure may be affected by lensing or by faulting. In still others, the area of closure may be formed by a series of faults in which blocks may be barren of productive without exact relationship to structural position.

It is unquestionably true that in most provinces in which active structural study is in progress, regional forces that are recognizable have been mainly responsible for the structures that are the object of search and an understanding of these forces and of the folds that are characteristically produced by them is a prime requisite to the interpretation of the results of further geological and geophysical exploration. On the Gulf Coast, in particular, the individual structure, in the absence of a recognized pattern of domal interrelationship, has certain features that are representative of the group and a thorough understanding of these characteristics is an indispensable aid to the interpretation of the data obtained by exploration. A knowledge of all of these fundamentals of regional and local structural occurrence constitutes the important working tool of the structural geologist.

Significance of Structural Elements as Related to Source

The structural elements which, grouped together, describe a fold are in themselves of uniform, simple character but the pattern produced by their interrelations may be of extreme complexity. Strictly from a structural standpoint, a short unit section of inclined strata, considered individually, is a positive element that is not subject to interpretation, but a large number of such units, grouped together, may afford an opportunity for numerous interpretations.

The unit itself is the basis of a structural survey, and, regardless of the means of acquisition of knowledge concerning it, its character and significance remain constant. A dip reading taken on a unit of strata at the surface differs in no important degree from a slope sketched on a seismic record or a section of datum horizon indicated by correlation of two adjacent well logs. In other words, the character of the record from which structural data are derived may differ radically, but each acceptable record should have the capacity to convey the same type of basic information.

In a study of this nature, these units are under consideration for the structural information they may convey but each is, in reality, a stratigraphic record and as such, is subject to geologic appraisal as regards fitness to serve as an element in structural analysis. An inclined surface bed may be the product of cross-bedding or slumping; fossil horizons that are the basis of well-log correlations may have varying degrees of reliability; and slopes derived from seismic records may be in conflict with known stratigraphic conditions; therefore, in evaluating these elements, the geological background becomes a prime requisite long before a structural study has reached the stage of actual structural interpretation.

There is a current notion in some quarters that the elements that form the basis for structural study take on a new and strange significance when the information source is the reflection seismograph. It is true that the results may be more than ordinarily significant because they have been obtained in areas where other sources of structural information have failed, but from a purely technical viewpoint, there is nothing new in type nor is there release from the limitations that characteristically surround such data. It would seem, then, essentially fallacious to contend for the existence of a distinct dividing line between orthodox structural geology and geophysics, or to assume that geophysics is a completely integrated science that has brought a new set of fundamentals, other than mechanical, into the realm of structural prospecting.

Function of Geologist in Geophysical Prospecting

The geologist may be said to have both a primary and a secondary function in his relation to structural geology. The primary function consists in acquiring a detailed knowledge of regional and local stratigraphy, since it is from this basis that the ground work for structural prospecting is laid. The secondary function is that of reducing geologic data to structural terms. A structural problem can be solved only by resolving it to its component parts. The process of building these parts back into a picture that it not in conflict with recognized controlling structural elements is a step that is accomplished with no material change in the objective or in the character of the end product, regardless of whether the resolving process has been effected by surface, subsurface, or geophysical means. In any event, each group of elements falls more or less within the same category of usefulness.

There was a time when most geophysicists and not a few geologists regarded geophysics as the cure-all for the problems of structural prospecting, but a readjustment of values has taken place and this idea is not so prevalent. It is true that in many areas where the geologist has set up the essential, preliminary geologic background, the geophysicist has appeared to reap all the glory by presenting evidence of localized structure and this has fostered a tendency on the part of the geologist to retire to the background and permit the geophysicist to make localized, purely mechanical interpretations of the results of his studies. This lack of continuous cooperation between the two has led to much needless misinterpretation of geophysics and there is a rapidly growing recognition of the error of this attitude. There are indications, in areas subjected to thorough prospecting, that the days of easy, successful accomplishment for geophysical methods are passing and this change is, in part, being effected by the gradual elimination of old prospects that have resulted from decades of comprehensive geologic study. Continued success in solving the complex structural problems that will unquestionably typify the future, therefore, will depend on greater improvements in technique and a guidance that is based on a more intensive application of geologic principles.

Conclusions

This paper might be expanded to much greater length by a further recital of proofs of the interdependence of geology and geophysics. It might be said with truth that geophysics has added greatly to the depth of geologic thought because it has given to the geologist a means of stratigraphic and structural appraisal that was formerly denied him. It might also be stated that geology serves as a guide to every step of geophysical activity, and, that without such guidance the geophysicist can not hope to reach his objective.

In order that both geologist and geophysicist may

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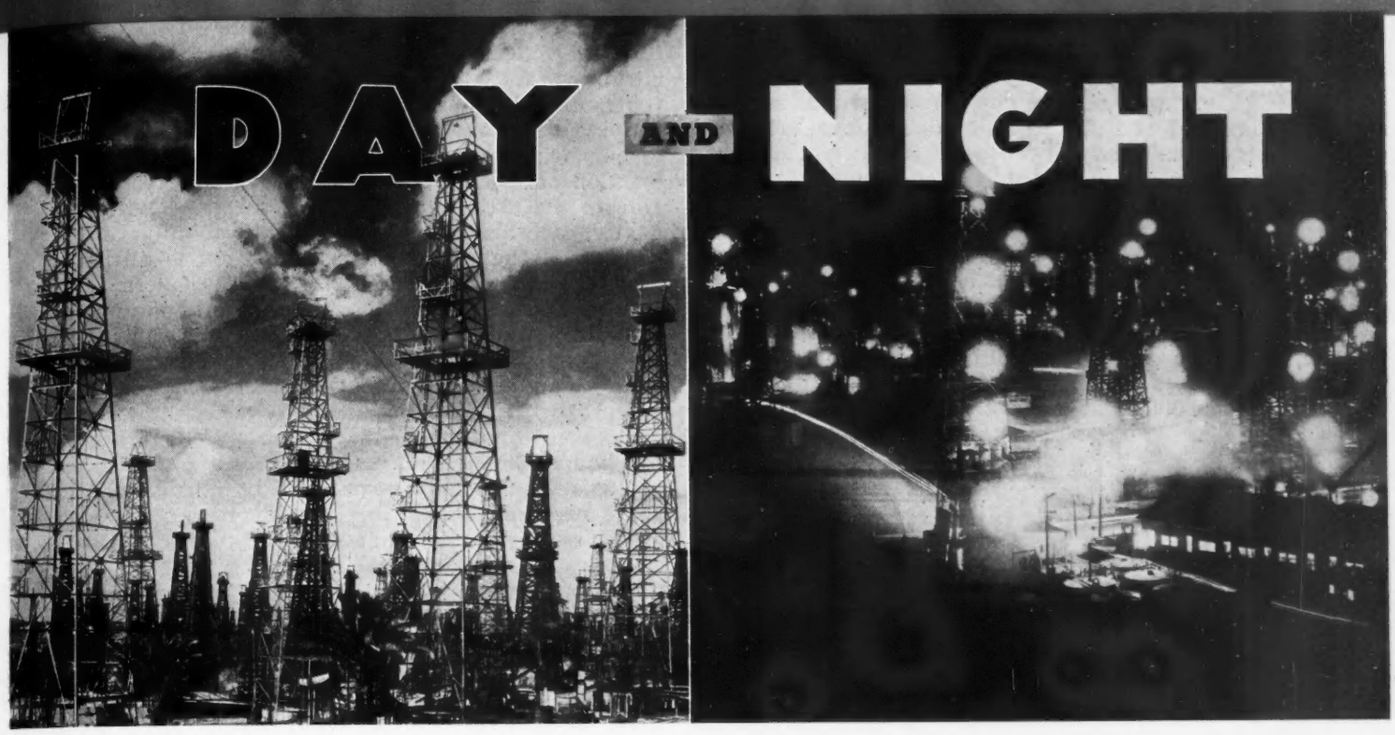

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benefit most effectively, the following suggestions are summarized.

1. *That the general direction of any oil-prospecting campaign be placed in charge of a competent geologist.* The obvious advantage of this arrangement is that, in laying out the areas to be prospected, full advantage may be taken of all the accumulated geologic knowledge, both in its bearing on the character of the records to be anticipated and on structural interpretation.

2. *That each geophysical field party should be accompanied by a competent field geologist.* This individual may guide the work from day to day and thus take full advantage of available geologic information. One of his important duties should consist of seeing that sufficient work is done where needed to avoid resurveying and in preventing needless work in areas that have no bearing on the particular problem.

3. *That an office geologist be detailed to work side-by-side with the geophysicist who makes interpretative maps.* The combination of training and experience in both geophysically applied physics and applied geology will produce results that will be devoid of many of the obvious errors that have characterized much of the unguided geophysics of the past.

Discussion by O. L. Brace of Blau's paper, "Interpretation of Geophysical Data"

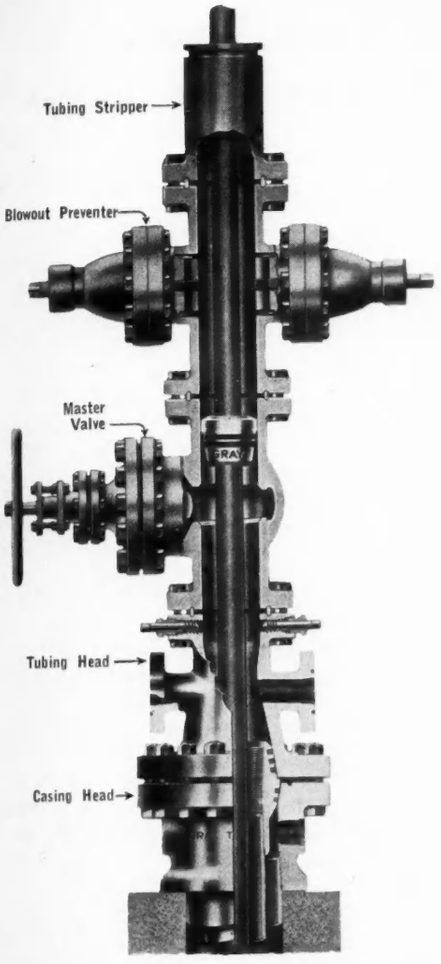
IN a previously published paper, "The Interpretation of Geophysical Data," by Dr. Ludwig W. Blau (The Oil Weekly, March 29, 1937), and in a discussion of my paper, "Interrelationship of Geology and Geophysics," by Dr. E. E. Rosaire, written for publication in "Geophysics," the main criticism of my expressed viewpoint lies in what these writers term the *orthodox* attitude of the geologist toward structural interpretation, which results in his insistence upon a picture that is *acceptable*. This attempt to place the toga of orthodoxy solely across the shoulders of the geologist represents a distortion of the facts. In an early part of his paper, Dr. Blau states that the geologist should "call to mind the prospects that were missed because pertinent data were disregarded," yet at a later point he relates, with tragic emphasis, how Marland Oil Company of Texas outlined, at an early date, by means of applied geology, a dozen or more structural areas, which have subsequently been brought in as producing fields, and how "geophysics in less than two years shot out . . . and condemned each and every one of them." This is obviously a case of orthodoxy, in geophysics, at its worst.

It is true that the geologist is too frequently, in his interpretation of structure, a victim of a restricted background and, particularly where he has been forced to concentrate within a given province over a period of years, is there a tendency to draw interpretative conclusions that are colored by the influence of a given structural type. A drift toward orthodoxy, however, is a weakness that plagues all science, and it little behooves the geophysicist to call the kettle black. As a matter of fact, the orthodox attitude of the geophysicist today is one of the greatest handicaps to the successful continuation of reflection seismic work. Both Dr. Blau and Dr. Rosaire forecast, with regrets, the early passing of the reflection seismograph as the outstanding exploratory method, all because of the shortage of first class domes. The second and third class prospects, of which there are a great number at the present time, are of this lower classification because they do not fit the requirements of the orthodox number one Iowa type. Yet, unquestionably, many of them represent favorable structural traps and, with proper interpretation, may lead to the discovery of oil reserves greater than those represented by the more spectacular first class domes of the past. A case in point is Tepetate. At the first mapping of this structure, the reflection seismologist was quick to give it an unfavorable rating because it did not conform to the more desirable major-closure type of structure.

Speaking commercially, both the geologist and the geophysicist are concerned with one problem: the location and delimitation of structural traps favorable to the accumulation of oil and gas. Quite evidently, each has his own place in the solution of this problem. It has not been my intention to advocate that the geologist should concern himself with those results of geophysical exploration that are of a purely abstract nature. If the geophysicist cares to contour with "sharp edges, scallops and other unorthodox frills" in an effort to present "measurements of physical properties . . . that are not to be correlated with geological conditions," that is surely his privilege and he has the right to resent the interference of the geologist in this highly specialized, and unquestionably intriguing, activity. The experienced geologist, however, knows that structures are essentially smooth and regular in their configuration and he is not to be blamed if he attempts, at the last analysis, to produce a picture that, while not necessarily orthodox and acceptable, is at least natural. As long as the geophysicist is dealing with measurements of physical properties that are understandable only to the physicist, then the geologist must content himself with his tasks as librarian, as Dr. Rosaire has it, and not intrude himself with his structural theorizing. It is when the geophysicist produces records that are purported to represent direct readings of strike and dip that the geologist enters the scene as a vital necessity. Even under such circumstances, the geologist, theoretically, becomes less a factor as the number of structural control points approaches infinity, but the difficulty of this approach makes interpolation a necessity and it is structural interpolation, in turn, that requires a breadth of knowledge of structural occurrence.

Both Dr. Blau and Dr. Rosaire have attempted to make a strong point of the fact that geologists, in the past and, therefore, by assumption, in the present and future, have failed to recognize structural elements that have since proven to be important factors in oil accumulation. A case in point, according to their contention, is that of the significance of faulting along the Mexia zone and the presence of faulting on the Gulf Coast. In my paper, I made the statement that "the complexity of structural forms under which oil and gas may accumulate was not recognized until this diversity was brought to light in the natural progress of oil field development," which is another way of saying that structural geology is a living science in which the fundamental, governing laws have been revealed directly as the result of experience. Due to the progress of the science prior to the Mexia days, I am inclined to question the statement that experienced geologists, conversant with the facts, did not recognize the significance of the faulting at Mexia, and, subsequently, on the Gulf Coast.

A WIDER CHOICE



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Wells of Gravel-Wall Type

OFFER DISTINCT ADVANTAGES WHERE UNDERGROUND WATER IS PRESENT IN SAND OR GRAVEL

By C. M. WILLIS

DEPENDABLE water supply is a major item in pipe line, field and station construction and operation. Many pieces of equipment necessary to sustained operation are cooled by jacket water, exchangers and after-coolers may have definite requirements and unrelated station and pipe line accessories may add to volumes of water needed. To meet these demands, which vary greatly from location to location and to type of construction, it is often necessary to depend upon water-bearing strata. Wells for water production have been improved with their more widespread use, the gravel-wall well being a type that has gained wide acceptance as solving many of the water-production problems.

The gravel-wall type of water well is used only where underground water is found in sand and gravel. Large volumes of water drawn from reservoirs of this type may result in frequent experience of trouble caused by sand coming in with the water, thereby filling the well with sand, shutting off the water supply and sanding up pumping equipment. In order to overcome this condition several types of gravel-wall water wells have been constructed, and are proving successful.

Water being produced from a gravel wall type of water well by means of gas lift. High velocity accounted for by pressure of gas used.

Hand Dug

One type of gravel-wall water well is dug 54 inches in diameter, using 54-inch casing, which is lowered as fast as necessary to keep the hole from caving and to protect men while digging. Manual digging is continued until water is encountered, the well being sunk from this point with an orange peel. The casing is forced down as fast as gravel and sand is removed, until the casing reaches bedrock or shale or other formation that can serve as a permanent casing seat and rest for the gravel pack. (See sketch.)

In order to set the reinforced concrete casing in a straight vertical column it is necessary to use a setting tube, 30 inches in diameter, in the center of the well so that there will be a space of at least 5 inches between it and the outer casing. The perforated casing, 24 inches in diameter, is then lowered in the setting tube to the bottom of the well, being built up to the upper water level by additional perforated casing. Plain casing is used to complete the well to the surface, or to a point desirable from another standpoint. Following this procedure, the space between the setting tube and the outer casing is ready to be filled with pea-sized gravel, which should be round so as not to retard the flow of water through it. The 54-inch casing and setting tube are removed a few feet at a time as the gravel pack is being filled in, leaving only the concrete tile casing in the well, and a short joint of 36-inch steel casing to keep out surface water.

Gravel Required

A gravel-wall water well dug 22 inches in diameter with 8-inch permanent casing set at 100 feet will take approximately 15 tons of gravel to fill to the top of the well. Some wells are filled with gravel to a point only a few feet above the water-bearing sand or gravel stratum, the remainder being filled with clay or similar material to exclude surface-water contamination. However, it is frequently desirable to fill to

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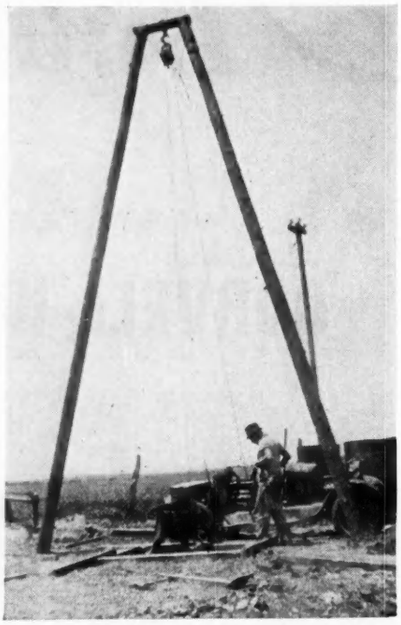
the surface so that additional gravel can be added as that already in the hole settles in the well.

Use of Pilot Holes

Gravel-wall water wells can be dug by hand, drilled with a drilling machine using a large bit, or bored with a rotary drilling machine. However, if the well is not to be constructed with a diameter large enough to provide a minimum space of 5 or 6 inches between the outer wall and the permanent casing, it is then necessary to drill two or more pilot holes (about 6 inches in diameter) near the well. These holes are drilled to the sand or gravel formation bearing the water, the fine sand and gravel removed and the gravel pack is then introduced through these holes.

As a part of the construction program of Panhandle Eastern Pipe Line Company, in providing greater transmission line facilities, a number of water wells of the gravel-wall type were dug or drilled in Moore County, Texas, and at three locations in Kansas. In the Texas Panhandle, west of Stinnett, 2 wells were completed to the red shale at 426 feet. In each well a 28-inch hole was drilled to 298 feet and the well was completed with a 16-inch hole. After being jetted with natural gas and thoroughly cleaned of all loose material, approximately 85 tons of gravel was installed in one well and 76 tons in the other. Each of these wells produced 239 gallons per minute with a drawdown of 13 feet in one case and 21 feet in the other.



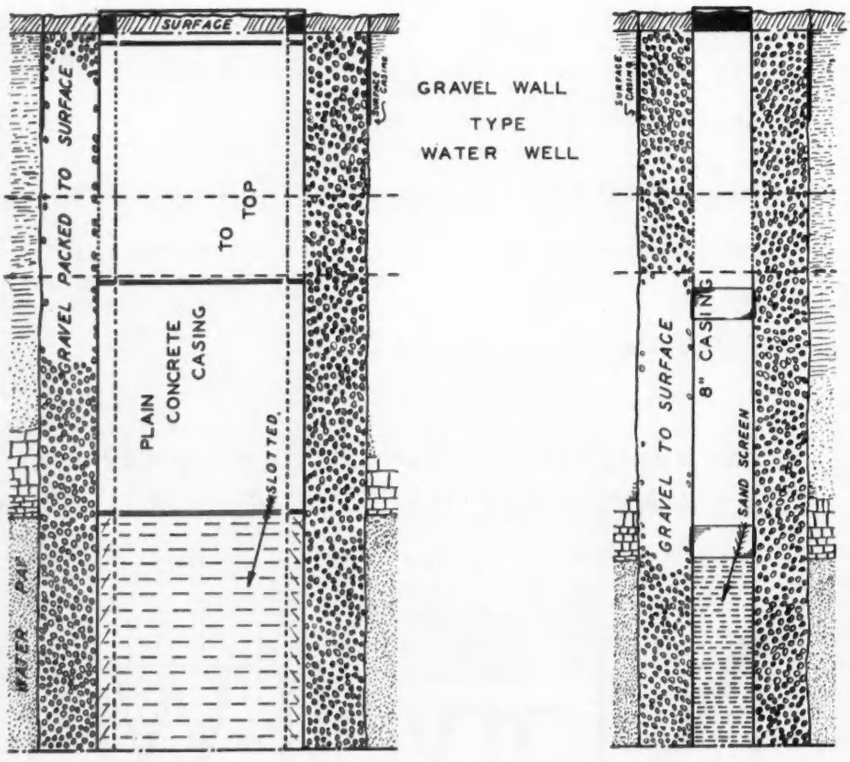
Type of frame and tackle used in digging a gravel wall water well of the type described in the text. Note surface box and winch. Tops of the poles were encased in steel pipe to which a cross member had been welded.

In Kiowa County, Kansas, two wells were completed to 128 feet. These wells were cased with 12-inch reinforced concrete casing and were constructed with an outside diameter of 28 inches. Each of these wells was tested to a production of 165 gallons per minute with a drawdown of only 27 inches. These wells were capable of much greater production but were tested to the limit of the testing pump. Two similar wells were completed near Haven, Reno County, Kansas, to 60 feet. These wells likewise were tested to the full capacity of the test pump, each producing 206 gallons per minute, the average drawdown being about 9½ feet.

Shallow Wells

Near Emporia, Lyon County, Kansas, in order to provide a sufficient volume of water it was necessary to construct three gravel-wall water wells in the flood plain of Cottonwood River. These wells were dug to a shale at an average depth of 28 feet. The water level stood at 15 feet and each well had about 11 feet of water-bearing sand and gravel. The wells were hand dug as were all the wells of this type in Kansas, with a 54-inch outside diameter. Twenty-four-inch reinforced concrete inter-casing was installed, slotted casing being placed from the surface of the water to the bottom of the well. Each well was protected with 20 feet of 42-inch welded steel surface casing from a point 6 feet above the ground line in order to protect the wells from flood water, the floors of the houses being constructed at this elevation on reinforced concrete piers. Each of these wells tested over 100 gallons per minute with an average drawdown of 12 feet during a test period of 12 hours.

A close examination of indicated or known water-bearing strata may determine the type of water well most adapted to a particular location, or selection may be necessary upon the basis of requirements. In some cases it would seem that the gravel-wall type of well is desirable in light of experience gained through specific instances. Continued use over a lengthy period is necessary to more accurately determine characteristics of the gravel-wall type of well, as compared with customary water wells.



MEN IN THE INDUSTRY'S NEWS

GEN. JAMES STEESE, "MAN OF ACTION," HEADED FOR PARIS

OIL MAN HAS SERVED COUNTRY MANY TIMES AS DIPLOMAT

JAMES G. STEESE, independent operator of San Antonio who will represent along with others the United States government at the Second World Petroleum Congress in Paris, France, June 14-19, is well qualified for the task. Although he was not born under a beam and had not stepped on a derrick floor until about 10 years ago, he formerly held the post of manager of South American Gulf Oil Company, today has a string of producing wells in Oklahoma and Texas, and is president of Guajillo Corporation.

Steese, a retired brigadier general of the United States army, holds a Distinguished Service Medal from the United States, a Croix de Guerre from France, and five other foreign decorations. He has served his country well in peace as in war, having represented the United States during the past 10 years in International Congresses in Cairo, Venice, Paris, Warsaw, London and Brussels.

Some time during the interim from 1902, when he graduated from West Point and joined the engineers' section of the army, to about 1933, when he became an independent operator, Steese apparently had a lax moment. During this lax moment, when he temporarily divorced himself from his other activities, such as Panama Canal construction work, improvement of rivers and harbors in the United States, building public works in Alaska and opening up that possession by building aviation fields, roads, railroads and harbors, acting as assistant chief of engineers during the World War and later as chief of a general staff section, or serving on diplomatic missions to the Adriatic and Balkan countries, or crossing the Andes, the Sahara, Australia, Siberia, or visiting Pitcairn Island, Steese took time out to become president of the Alaska Railroad.

The Britishers have called Steese a man of action. Others have remarked that such a characterization is typical of British conservativeness.

JAMES G. STEESE

ROBERT R. HAWKINS, former district engineer and production superintendent of the Oklahoma-Kansas-Kentucky producing division of The Texas Company, joined the ranks of the consulting operators last week. Hawkins has been very active in engineering circles in the Mid-Continent, and has also been closely associated with the work of the American Petroleum Institute, serving as committee chairman and general chairman of this district during 1933.

B. F. DICKEY, chief clerk in the Tulsa office of The Texas Company, has retired after 19 years of service with the company, having joined the firm on September 1, 1918. Before going with The Texas Company, Dickey was clerk of the United States district court for eastern Oklahoma until the late Judge R. E. Campbell resigned. C. A. Patterson, N. E. Glisson and H. F. Dunn step up as title clerks as a result of the resignation of Dickey.

J. M. KOCH, Oil City, Pennsylvania, vice president of Quaker State Oil & Refining Corporation, was a business visitor in Calgary, Alberta, Canada, last week. He was accompanied by W. R. Macarthur, Winnipeg, Manitoba, general sales manager for North Star Oil, Limited.

REV. DR. RONALD MACLEOD, who recently resigned as minister of Rosedale United Church at Toronto, Ontario, Canada, has been named director of welfare for the International Petroleum Company, Limited. He is preparing to sail for Peru in May where he will work for a time among employes of the company. His headquarters will be in Toronto.

C. B. McCLINTOC, instructor of the Oil City, Pennsylvania, oil production class of the Pennsylvania State College extension division, conducted his class on a field geology trip throughout the Oil Creek section last week. Outcropping of formations near Rouseville, Titusville, Tionesta, and Tidioute were studied and the properties of National Oil Company visited.

A. J. ANDERSON, W. H. Shaw, A. Burrell, H. W. Knight and James Lyon were re-elected directors of the Ajax Oil & Gas Company when shareholders held their annual meeting in Toronto, Ontario, Canada, last week.

ALBERT W. ROTHROCK, driller for Colombian Petroleum Company on the Barco Concession, Colombia, was in New York last week preparatory to returning to Colombia after a vacation spent in the States.

E. V. EASTERWOOD, JR., land man for Tide Water Associated Oil Company, Lafayette, Louisiana, was in Houston last week on business.

W. C. BORING, pumper for Gulf Oil Corporation in the East Texas field, has been transferred to Midland for scouting duty in West Texas.

A. M. BILLINGS, former attorney for Magnolia Petroleum Company, Dallas, and R. B. Strayhorn, manager of the Fort Worth division land department for Transcontinental Oil Company prior to its sale to Ohio Oil Company, have formed a partnership to engage in oil producing activities, with office in the Southwestern Life Insurance building, Dallas. Billings et al are starting a wildcat in DeSoto Parish, Louisiana.

H. G. CORNEW, Standard Oil Company of California, recently was in Mexico City. Cornew at one time lived in Tampico.

D. K. SMITH, manager of Globe Petroleum Company, has returned to headquarters at Tampico, Mexico, after a vacation in Texas and Louisiana.

HAROLD J. WILKINS, secretary and treasurer of Cia. de Gas y Combustible Imperior, S.A., subsidiary of Cities Service Company, at Tampico, Mexico, is spending a vacation in Louisiana.

S. F. SHAW, consulting engineer for Westgate Oil Company, has returned to Oklahoma City from Calgary, Alberta, Canada, where he made a study of production methods employed at Turner Valley.

F. WAYNE COVAULT and Arno Behnke, superintendent of production, and assistant superintendent, respectively, for Amerada Petroleum Corporation in the Fort Worth division, were in New Orleans the past week for several days in connection with the company's operations in Louisiana.

CHESTER O. SWAIN, 60, vice president and member of the executive committee of Standard Oil Company of New Jersey, died April 21 after four months illness of bronchial pneumonia. Swain joined the company as assistant general attorney, was made general solicitor in 1915, and in 1927 was elected a director. He became a vice president in 1935.

DOUGLAS DUNNING, 39, Fort Worth operator, died April 20 in a hospital at Liberty, Texas, where he had been confined since April 13 due to injuries sustained in an auto accident. He was a brother of the late Wm. H. Dunning, Jr., who succumbed to a heart attack last month while visiting his oil properties in West Texas.

Short Gas School

COMPLETE, VARIED PROGRAM PRESENTED AT 13TH COURSE

By FRANK B. TAYLOR, Staff Writer

Norman, Okla. — Enrollment of gas engineers from all parts of the southwest neared 600 registrations at the Southwestern Gas Measurement Short Course held at the University of Oklahoma, at Norman, April 20, 21 and 22. Groups and individual gas engineers came from such widely scattered points as West Virginia and Montana. Oklahoma, Kansas and Texas supplied the majority forming the thirteenth course, a yearly meeting sponsored by and in conjunction with the College of Engineering.

Gilbert Estill, superintendent of gas measurement for Oklahoma Natural Gas Company, was elected general chairman for 1938, succeeding E. E. Stovall.

17 Papers Presented

A full program consisted of the delivery of 17 papers by operating engineers, 30 or more informal discussions of pertinent questions by recognized authorities and assemblies less directly related to operating functions. Many of the sessions were run concurrently either in the auditorium or classrooms of the building of the College of Engineering. Other rooms were set aside for the exhibition of new and instrumental equipment, a special manufacturers addition. Sixteen major gas equipment manufacturers were represented.

Registration was started Tuesday morning, continuing through the meeting. General assembly was called with E. E. Stovall, Lone Star Gas Company and general committee chairman, presiding. Dr. W. B. Bizzell, president of University of Oklahoma, was introduced to the gathering by J. Y. Wheeler, vice president, Oklahoma Utilities Association, and gave the address of welcome. The meter school committee was introduced by Chairman Stovall and gavels were presented to ex-officio members by Professor W. H. Carson of the college. The morning meeting was concluded with short addresses by W. F. Lowe, secretary of N. G. A. A., Captain A. E. Higgins, secretary of Natural Division of A. G. A., and by H. M. Stalcup, vice president of Skelly Oil Company. The report of the committee for study of practical methods was made by L. G. Rheinberger, Sinclair Prairie Oil & Gas Company.

Three Tuesday afternoon periods were featured by papers on "Functions of Field Meter Men," presented by E. C. McAninch, Oklahoma Natural Gas Company; "Field Testing of Large Capacity Displacement Meters," by J. F. Steckelberg, Arkansas-Louisiana Gas Company; "Calculation of Orifice Meter and Displacement Meter Charts," by F. L. Trube, United Gas Public Service Company; "Well Capacities," by D. T. MacRoberts, with the same firm; and "Problems of Elementary Gas Laws and Operation of Calorimeter," by E. F. Dawson and S. H. Cromer of the university faculty. Coincident with these mentioned papers, which were each followed by extensive, informal discussion and comment, manufacturers' representatives held open talks on the functions of various pieces of equipment, including regulators, calorimeters, integrators, high and low pressure meters and controlling instruments.

Wednesday sessions opened with general assembly in the auditorium; E. E. Stovall, presiding. After a short review of past interest in the measurement course, and a general explanation of policy, cash awards were presented to seven men of the 1936 school who submitted the best papers of from 300 to 500 words on the subject, "What I Learned at the Meter School." George Thurber, Jr., Arkansas Louisiana Gas Company, Shreveport, received a check for $15 as first award, and R. F. Downey, Lone Star Gas Company, Dallas, received second award of $10. Five dollar awards were presented to Dean Bruce, Oklahoma Natural Gas Company, Muskogee, Oklahoma; Edward S. Doerr, Lone Star Gas Company, Dallas, E. C. McAninch, Bristow, Oklahoma; J. M. Howard, Kansas Power and Light Company, Manhattan, Kansas, and Dan W. Yarberry, Dallas Gas Company in the order named. As some of these men were not present, the checks were given to representatives of the same firm with the expression of the chair that he had the greatest confidence in gas men.

Meters Subject of Papers

"Fundamental Principles of Orifice Meters" was the subject of a paper by A. F. Benson of American Meter Company. "Fundamental Principles of Displacement Meters" was discussed by A. D. McLean, Pittsburgh Equitable Meter Company, to close the morning meeting.

Afternoon highlights were papers: "Operations of High-Pressure Gas Wells," prepared by F. D. Frank, Cities Service Gas Company and delivered by Lane Fergeson of the same firm; "Problems of Wet Gas Measurement and Regulation," a round table discussion by H. F. Chapman of Phillips Petroleum Company and R. D. Hanley of Magnolia Petroleum Company; "Care and Operation of Orifice Meters," by Pat H. Miller, Panhandle Eastern Pipe Line Company; and "Calculation of Orifice and Displacement Meter Charts" by F. L. Trube, United Gas Public Service Company. "Meter Shop Practice" was the subject of an interesting paper upon this angle of measurement, given by Pat Davis, San Antonio Public Service Company.

Important discussions and breakdown of fundamental data on meters, regulators, bell prover design and operation, automatic devices for control and mention of new departures from past design in equipment were entered into by engineers attending the numerous displays. An analysis of gravity determinations and means was made during the afternoon; the same talk discussing manners of cleaning mercury for use in gas testing equipment.

The last day of the course, Thursday, was opened by general assembly. E. M. Myers, Oklahoma Corporation Commission, prepared a paper on the "Valuation of a Gas Utility," for presentation and "Problems of Regulator Freezing" was the subject of another paper of interest by M. A. Hardie, Jr., Montana Power Company.

During the afternoon one of the most important factors constantly facing the

EASTERN A.P.I.

Columbus meet to have varied technical program

Columbus, Ohio.—Four sessions are on the program for the annual meeting of the Eastern District of the American Petroluem Institute, Division of Production, to be held in Columbus, Ohio, May 6-7, at the Deshler-Wallick Hotel.

May 6, Dr. George W. Rightmire, president, Ohio State University, will deliver the address of welcome. A highlight of the meeting will be an address entitled, "The Tax Situation in Our Industry," by Axtell J. Byles, president, American Petroleum Institute, New York.

Papers Scheduled

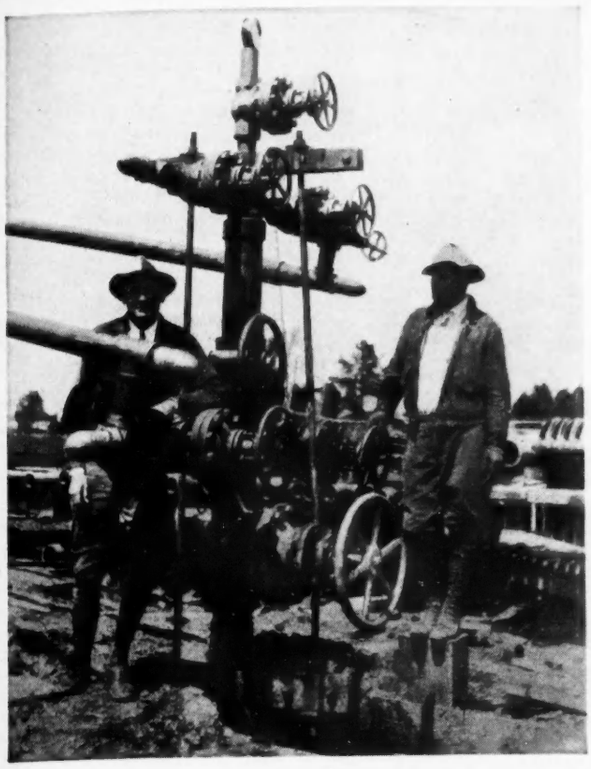
An interesting technical program is in the course of preparation, with the following papers: "Future Possibilities of Michigan Oil and Gas Production," by Dr. Virgil Kirkam, Saginaw, Michigan; "The Use of Prepared Mud and Oil Well Cementing in Eastern United States," by C. P. Parsons, Halliburton Oil Well Cementing Company, Duncan, Oklahoma; "Recovery and Repressuring in Deep and Shallow Sands in the Eastern Area," by Wilbur Stout, state geologist, Columbus; "Prospect of Deep Production in the Illinois Basin," by Theron Wasson, Pure Oil Company, Chicago; "Use of Geophysical Methods in Oriskany Production," by L. E. Randall, Charleston, West Virginia; "Rotary Drilling in the East," by Frank M. Brewster, president and general manager, Belmont Drilling Corporation, Bradford, Pennsylvania; "The Oil Industry in Kentucky," by Paul Balisler, Ashland Refinery Company, Ashland, Kentucky.

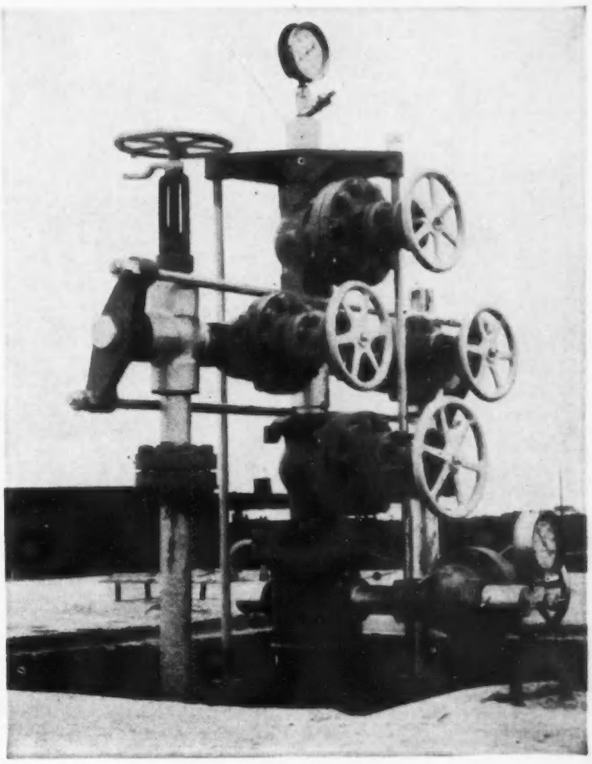
Askam Heads Committees

The annual stag dinner and entertainment will be held Thursday evening at 7:30, with J. C. Askam, Ohio Oil Company, Findlay, presiding.

The meeting will be in charge of the following committees acting under J. C. Askam, chairman, for the Eastern district: program: George Wittmer III, chairman, Wittmer Oil Company; J. J. Schmidt, East Ohio Gas Company; E. E. Eckert, Hanley and Bird; arrangements: D. T. Ring, Ohio Fuel Gas Company; publicity: H. J. Lowe, The Pure Oil Company; registration: Christy Payne, Jr., Peoples Natural Gas Company.

KEROTEST





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measurement department, "Determination of Line Losses," was discussed in two parts by R. O. Cox, Lone Star Gas Company, and A. F. Cox, Amarillo Oil Company. The subject was divided into its natural components, high- and low-pressure lines. "Pilot Operated Regulators" was a paper by Norris Plank, Shell Petroleum Corporation, Tulsa. E. E. Ambrosius of the university faculty had an open class on the "Operation of Slide Rule and Gas Rule." During these talks and open discussions, reports were given on the results of investigation of regulator design as influencing control problems, the installation and operation of such equipment, and a thorough analysis of the gravitometer.

Intense interest was evident throughout the entire course. Talks of methods and practices were not confined to classrooms but were in order wherever three or more measurement men got together. The informality of the scheduled meetings had much to do with the good each individual professes from the study. Many notes were made of new ideas, new means of accomplishing an old task; and these notes were filed away for use after returning to field or office.

Many new pieces of equipment were set up for examination by anyone interested. Cut-a-way views made functions of equipment more readily understandable, and if questions were to be answered, a man familiar with the particular equipment was always at hand. Interest was high in many of the devices seen for the first time by a number of those attending the three day session.

Digest of Papers at the 1937 Southwestern Gas Measurement Short Course

"Methods of operating High Pressure Gas Wells," by F. D. Frank, Cities Service Gas Company, Bartlesville, and delivered by Lane Fergeson, gives a brief discription of the difficulties encountered in taking gas from high pressure wells, and methods which were adapted to eliminate, as much as possible, these difficulties. Particular trouble has been experienced from four types of difficulties associated with production of gas from high pressure reservoirs, these being Regulation of Deliveries, Elimination of Freezing, Removal of Fluid and Measurement. Each of these causes were individually discussed, with suggestions for allaying or eliminating trouble.

Gas Utility Valuation

"Valuation of a Gas Utility," by E. M. Myers of the Oklahoma Corporation Commission, discussed the relationship between the utility and the state department. Important phases of depreciation and inventory were analyzed frankly with particular reference to the necessity for complete lists of equipment and evaluated installations Care necessary to impartial and controversial determinations was emphasized, and the desirability of inclusive records for greater accuracy was expressed, this being mutually beneficial.

Regulator Freezing Problems

M. A. Hardie, Jr., Montana Power Company, who has made a considerable study of the formation of gas hydrates spoke on "Problems of Regulator Freezing." He pointed out the three basic methods which will hold this formation to a minimum. These means were considered as being the reduction of the water content of the gas being regulated, heating of the gas through the regulator to prevent a freezing temperature from being reached, and slow reduction of pressure to eliminate temperature-pressure differentials of a degree making hydrate formation probable.

"Problems of Wet Gas Measurement and Control," by H. F. Chapman, Phillips Petroleum Company, Oklahoma City, was an extensive breakdown of factors influencing control and measurement of wet gas, including a listing of common causes that might aggravate the unstable conditions usually prevalent. These divisions of the major subject were treated separately, with pertinent suggestions both as to the handling of either wet or sour gas and to the care of equipment used under adverse conditions commonly associated with wet or sour gas production.

The problems peculiar to the "Field Testing of Large Capacity Displacement Meters" was discussed by J. F. Steckelberg, Arkansas Louisiana Gas Company. The various methods customarily used in field testing of larger size positive meters, and their particular adaptions, was discussed from the point of view of the operator. Correct manners of procedure were detailed and explained. Application of corrective factors was included in the paper. An additional fact was mentioned, relative to meter testing, that is frequently overlooked; this was the care toward safe practices in testing operations.

Care of Meters

P. H. Miller, Panhandle Eastern Pipe Line Company at Kansas City, spoke upon the "Care and Operation of Orifice Meters," in order to assure maximum accuracy and minimum of attention. The various parts of the meter that are most frequently troublesome were discussed and means suggested whereby they could most aptly be kept in proper condition. Mercury was mentioned as being a great offender in obtaining absolutely correct measurement. Proper installation was stressed and regular and strict attention or inspections of all parts and connected equipment was advised. The talk was provocative of wide discussion, with points not covered in the original paper being brought up for consideration.

"Well Capacities" was the subject of a paper by D. T. MacRoberts, United Gas Public Service Company. In it, the author closely examines the common methods of taking capacities of gas wells. The advantages and disadvantages of each are discussed and compared. Fundamental considerations of the calculations are mentioned, and possible consequences of the various flow means upon the productive horizons are made the subject of a keen examination. The subject is one of considerable interest, an interest that has been sustained during the past five years. Inaccuracies of the methods are pointed out and the reasons for the inaccuracies are given. A brief of the back pressure method, and formula, are included in the engineer's paper.

Postpone Trial

[*Continued from page 11*]

his argument and resumed his seat, saying, "If that is going to be the attitude of the government, then there is nothing we can do but submit."

Attorney Thomas gave a lengthy citation of parts of the indictment, in which he asked that the government be required to furnish the names, time and place, and the substance of what transpired in connection with the alleged conspiracy. A long conference of government and defense attorneys was held Tuesday night, at which they tried in vain to agree on reduced demands for a bill of particulars.

Hammond E. Chaffetz, of government counsel, told the court that "defense counsel has a fundamental misconception of their right to a bill of particulars. We've gone farther than the law requires." Defense counsel eliminated many of their demands made in the original request for bills of particulars.

H. R. Wilson, Houston, Texas, arguing a special demurrer on behalf of P. C. Scullen, vice president and general manager of Indian Refining Company, subsidiary of The Texas Company, prefaced his argument with a 15-minute apology to Judge Stone for taking up so much of the court's time, and concluded with another 5-minute apology. His argument, which took 20 minutes of 40 during which he had the attention of the court, pointed out that Scullin is the only defendant whose company has not also been indicted and that he is not specifically named as an agent of the parent Texas Company.

"The government of my country has brought these indictments," Wilson repeated several times in a tone that indicated he was hurt and grieved. Referring to his demurrer as "this very virtuous demurrer," he said charges set forth in the indictments "are nothing but bear-trap allegations, they catch you one way and they catch you another."

Chaffetz dismissed Wilson's argument by saying that while there might be some debate over the language of the first indictment of Scullin, the sec-

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ond similar indictment, returned December 22, 1936, was drawn specifically to cover his case. Government attorneys obtained new indictments in December after the first set had been challenged as illegally drawn by defense counsel. Judge Stone subsequently ruled against defense counsel, and as a result two sets are now before the court. Government attorneys are expected to try the second set and move for dismissal of those returned July 28 and November 6.

Motion Dissolved

Arguments on a motion for dismissal of the indictments against Tide Water Associated Oil Company of New Jersey, which was dissolved last September, were also concluded. Bethuel M. Webster, Tide Water Associated attorney, argued that New Jersey law covering dissolution of corporations declares that corporations retain their corporate entity for purposes of civil suits but not for criminal actions, and cited several cases in which prosecutions were dismissed after dissolution.

John Henry Lewin, of government counsel, insisted that "suits" and "actions" are synonymous in the New Jersey statutes and that the latter term is broad enough to cover criminal actions. Judge Stone said he did not believe the corporation dissolved as a means of defeating the indictment.

"I do not think so either," Lewin conceded, but he insisted that under the law the transfer of assets to the Delaware Tide Water Corporation was a fraudulent conveyance nevertheless.

Texas Allowable

[*Continued from page 11*]

of the month the allowable assigned to it.

With the improved system of checking, the commission plans to eliminate from proration schedules dead wells which may be incapable of further production, and to materially reduce allowables on those wells incapable of producing the amount which has been assigned to them.

Operators present at the hearing objected only to the proposal of the commission that the reports be filed on the twelfth day of the month following the month reported, instead of on the fifteenth day, as is required now. They protested that they would not have time to gather the data and put it on the form.

Small East Texas Pressure Drop

Testimony of V. E. Cottingham, director of production for the railroad commission, indicated that there would be no necessity for decreasing the allowable for the East Texas field during the month of May. He reported a pressure decline of 2.68 pounds for the field as a whole from March 12 to April 12, when the average pressure was 1,167.61 pounds.

Cottingham pointed out that during this time, the production averaged 455,845 barrels daily, and that pressure declined at the rate of .202 pounds per million barrels produced. He explained that this decline was not alarming since it was below the average decline of .23 pounds per million barrels produced, which had been maintained for the past three years.

Panhandle Wanted Increase

An increase of approximately 8000 barrels daily in the allowable for the Texas Panhandle was requested. Phillips and Danciger both presented evidence to show that their allowances now are insufficient to supply the daily consumptive demand of their refineries.

Storage during March declined at the rate of 5886 barrels for the Panhandle field as a whole, and withdrawals have averaged 11,000 barrels daily for the past 15 months.

A 2000-barrel increase in the Van allowable was requested by Pure Oil Company. This would bring the total field allowable to 37,000 barrels daily which the Pure said was necessary to supply current refinery demand. The company has less than 10 days working stock on hand.

Pure Oil Company has been paying a premium of 12½ cents per barrel for East Texas crude which it has had to purchase to substitute for oil which the company said it could produce at Van for a field cost of three cents per barrel.

West Texas producers urged the commission to continue to grant special allowances for completing wells. Operators in the Goldsmith and North Cowden fields testified that by producing from 200 to 3000 barrels of oil during the completion of well with cable tools, they were able to set packers that would enable them to shut off the gas and materially curtail gas-oil ratios in the two reservoirs. They explained that it was necessary to obtain the special permits promptly, but added that they were willing to shut down the wells completely until the excess permitted had been made up by the particular well.

Commissioner Thompson pointed out that the commission had become alarmed at the amount of oil requested under these special permits, especially when it totaled 80,000 in one week. The commission seemed inclined, however, to continue the practice when they were sure the excess would be made up later.

At the request of Sinclair Refining Company, the commission scheduled a hearing to be held in Austin on May 4, at which it will attempt to determine the proper unit assignable to a well for proration purposes in the North and South Cowden field. The Sinclair pointed out that the well spacing program permits the drilling of one well to each 17 acres, while the only proration unit contained in an order includes 40 acres.

At this same hearing, the commission plans to take up similar problems in the Sand Hills field and the Waddell field in Crane County.

An increase of 3000 barrels daily in the Conroe allowable was requested by the Conroe Operators Association. Alexander Deussen told the commission that the field had a firm demand for 54,000 barrels daily, which could be produced without waste.

Ocean Ownership

[*Continued from page 12*]

As a result of the department's refusal to enter the situation, applicants last December asked Attorney General Cummings to initiate a suit to deprive California of title to the lands.

So far, no action has been taken by the Department of Justice, but Senator Nye this week practically forced the attorney general to move by calling upon him for an opinion as to the rights of the United States and, should that opinion hold that title rests with the state, will ask early consideration of his bill by the Senate.

However, the senator said, although the attorney general should long since have moved in the matter, he will not request a hearing on the measure until the department gives him the opinion for which he has asked.

Bill Reverses Decisions

Observers whose interest has been attracted to the matter point out that the Nye bill reverses several Supreme Court decisions and upsets long-standing interpretations of the treaty of Guadalupe Hidalgo and various mineral laws.

Although only now coming out into the open, the California situation has been brewing for a number of years, it is said. The question of California's rights has been involved indirectly in cases decided by the Supreme Court, which are said to have upheld the title of the state to the submerged oil lands.

Despite the repeated rulings of the Interior Department that the state's claim to the lands was valid, it is understood that there is a difference of opinion on that point among the members of the department's legal staff. A similar variance of opinion is said to prevail at the Department of Justice.

Court Test Likely

At neither department has any satisfactory reason been given for failure to make an issue of the matter to determine whether the state or the federal government is the rightful owner of the lands. Groups in both departments, however, feel that the matter should be tested in the courts, asserting that in claiming title the state has assumed rights which were actually conveyed to the Federal Government by Mexico; even if the government does not have title to the land itself, it is contended, it has title to the minerals thereunder.

While numerous parties interested in having ownership of the submerged area transferred to the Federal Government sought to extend that ownership to the high-water mark, the Nye bill calls for nationalization only of lands below the low-water mark, leaving the state of California in possession of the tidal strip.

If the bill is made the subject of hearings, it is said, it will be found that politics have played an important part in the development of the off-shore oil field and that the original agitation for nationalization came from interests which had unsuccessfully sought to participate in its exploitation.

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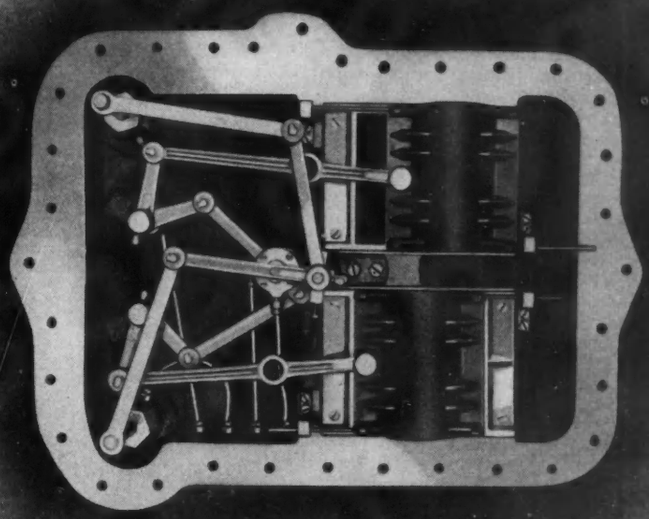

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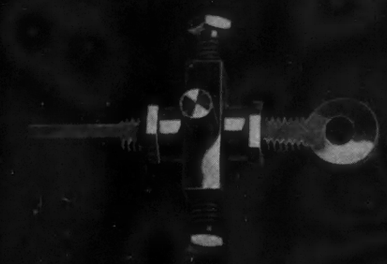

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In the FINANCIAL FIELD

DEVELOPMENTS in the financial field lately have embraced issuance of several more reports on operations in the first three months of 1937, as well as release of additional annual reports covering 1936.

The Atlantic Refining Company is among the several concerns that already have reported for the first quarter. The company showed for the first three months a profit of $1,993,000, compared with profit of $1,983,000 for the corresponding period last year. These figures are after interest, depreciation, taxes, and other charges.

It has been estimated that for the first quarter of 1937, Shell Union Oil Corporation will show a profit about 50 percent larger than for the similar period last year. In the first quarter of 1936 the company reported net income, after charges, of $1,681,984. The better showing expected this year will be due to increased sales and comparatively favorable prices.

Oil Shares Active

In the dealings in the securities markets, oil company shares have continued to be active. This activity has been pronounced for several weeks, and apparently reflects a recognition of the industry's favorable statistical position. Moreover, the interest in oil shares reflects, perhaps, the rumors that have persisted, to the effect that crude oil prices are destined to be increased before long.

More Reports for 1936

Amerada Corporation is among the concerns that recently have issued annual reports covering 1936. For the year, the company showed a net profit of $1,983,901, after depreciation, depletion, drilling costs, leases abandoned, federal taxes, etc. This compares with profit of $1,797,613 in 1935, and with profit of $1,736,420 in 1934.

Amerada Corporation last year did considerable more drilling than in 1935, completing 196 wells, compared with 165 wells in previous year. The company follows the policy of charging such drilling expense in the year in which the development takes place. In contrast, some other companies amortize drilling expenses over a period of years.

Amerada in 1936 had a net production of 8,853,688 barrels of crude oil, compared with 7,799,031 barrels the year before. The average price received for crude in 1936 was $1.07 a barrel, or 10 cents a barrel more than in the previous year.

A. Jacobsen, president of Amerada Corporation, stated that operating costs last year were higher than in the previous year, and predicted that still further increases will occur, because of rising taxes, higher costs of materials, and higher wages. He was optimistic, however, over the prospects for 1937. Amerada last year made a net addition to its proven reserves of crude oil underground, according to Jacobsen.

Pierce Petroleum Corporation

Pierce Petroleum Corporation has reported for 1936 a net loss of $679,758, compared with net income of $124,355 in 1935. The company's sole assets, according to W. H. Coverdale, president, consists of 125,000 shares of Consolidated Oil Corporation common stock and about $375,000 in cash, against which are liabilities to Pierce Oil Corporation.

Lion Oil Refining

Lion Oil Refining Company for the first three months of 1937 showed an increase of about 32 percent over the similar period last year in the sales of products, through controlled retail and bulk outlets, according to T. H. Barton, president.

Tide Water Associated

Tide Water Associated Oil Company for 1936 reported net income of $10,217,928, equal after preferred dividends to $1.11 a share on the average number of common shares outstanding. This compares with $7,865.701 or 73 cents a common share in 1935.

The company and its subsidiaries in 1936 produced 19,942,620 barrels of crude oil, compared with 18,376,712 barrels the previous year.

Standard of Indiana

Standard Oil Company (Indiana) in its annual report to stockholders for 1936 reported improvement in all branches of its business and the best results generally since 1929. The company showed net profit of $46,883,448 for 1936, equivalent to $3.09 a share on the capital stock, after charges. This compared with $30,179,895, or $1.98 a share in 1935. The improved earnings were attributed to larger sales and better price conditions. The company in 1936 spent $50,000,000 in expansion projects and for preservation of properties.

Consolidated Oil Corporation

Consolidated Oil Corporation last year had the best earnings in seven years, showing for 1936 net profit of $16,728,930 after interest, depreciation, depletion, federal income taxes, canceled leases, abandonments, and so forth, equivalent after dividends on preferred stock to $1.18 a share for 13,919,417 no-par shares of common stock, excluding 299,418 shares in the treasury. This compares with net income in 1935 of $11,306.904, or 74 cents a share on the common stock. In 1934 the company showed a profit of $553,282.

Accompanying the Consolidated Oil Corporation annual report was a letter, in which H. F. Sinclair, chairman of the executive committee, revealed that stockholders will be asked at their annual meeting next month to authorize directors to issue $50,000,000 of debentures, "to take advantage of a favorable opportunity for obtaining funds." It is contemplated that the company's $5 preferred stock at present outstanding would be redeemed, in view of current low interest rates, and that funds obtained would be used for capital expenditures.

In connection with the proposal, it was pointed out that the oil industry requires large capital investment to keep abreast of the demand for production, refining, transportation, and marketing facilities. "A large part of such expenditures in the past has been derived from earnings," said Sinclair, but added, "owing to the federal surtax on undistributed profits, it is no longer practicable to pursue this course."

The Pure Oil Company

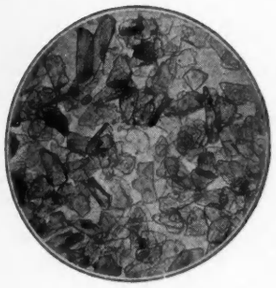
L. S. Wescoat, vice president of The Pure Oil Company, at the annual meeting of stockholders at Columbus, Ohio, stated that earnings of the company for the first quarter of 1937 are expected to be substantially higher than those in the similar period last year. He intimated, also, that the company soon may resume payment of dividends on the common stock, on which there have been no payments since September 1, 1930.

The Pure Oil Company and subsidiaries for 1936 reported net profit of $7,658,372, after charges, and federal taxes, which after preferred dividend requirements was equivalent to $1.63 a share on 3,285,120 shares of common stock. This compared with $8,150,027 or $2 a share on 3,038,370 common shares in 1935. The company in 1936 spent about $4,000,000 on new refinery facilities, and plans to spend about the same amount this year. The company is optimistic over its new Illinois field, where it has about 250,000 acres of leases and two completed wells that initially produced about 150 barrels daily each. A third well will be drilled one half-mile north of the first well and 2 offsets to the second are being started.

Through financing that has been authorized by the stockholders, The Pure Oil Company expects to have available about $8,000.000 for needed capital expenditures. The company plans to sell soon $42,000,000 of new convertible preferred stock. Proceeds from sale of the stock, with funds obtained through exercise of common stock purchase warrants attached to notes that are outstanding, will be used to retire on July 1 $28,500,000 of 4½ percent notes; $4,000.000 of long-term bank loans; and $7,662,000 of 8 percent preferred stock now outstanding. Notes outstanding with warrants attached total about $15,000,000 and the complete exercise of these warrants would provide $6,750,000. Since January 1, this year, the exercise of warrants has provided $4,000,000. In 1936, $3,500,000 of 15-year notes were retired through exercise of common stock purchase warrants attached to the notes.

Canadian Companies

Imperial Oil Company, Limited, reports net earnings from all sources during 1936 to be 95.04 cents per share on 26,965,078 no par value shares, as compared with 93.56 cents per share for 1935. Of this total, 11.03 cents per share was derived from Canadian refining and



Reproduction of the micrograph at the left shows the interlocking of the flakes of the internal reinforcement used by Barrett. By laminating with the waterproofing agent, they give Barrett Pipe Line Enamels unusual toughness and resistance to soil stresses.

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marketing operations, while 84.01 cents was derived principally from investments. After making provision for depreciation, depletion, insurance, employes' annuities, taxes and other reserves, the company can be regarded as reporting consolidated net profits fully earned in 1936 of 66.79 cents a share from all sources ,compared with 61 cents a share in 1935. The company's exploratory activities in the Turner Valley field during the year consisted of two wells, one a gas and naphtha producer and the other a producer with initial production of 125 barrels daily.

Royalite Oil Company, Limited, reported 1936 net profit at $801,356.27, bringing the earned surplus up to $2,100,272.68 after payment of $1,409,958 in dividends, in its annual statement released last week. Royalite is a subsidiary of Imperial Oil Company, Limited, and the largest operating company in Turner Valley. Total income from 1936 operations was $1,742,695. After deduction of $971,322 for depletion, depreciation, directors' fees, solicitors' fees and salaries of executive officers, and $169,966 for Dominion and Provincial income taxes, the $801,356 net profit remained. Sales of petroleum products increased by 13.7 percent in 1936, natural gas sales increased 7.9 percent, and the average price per barrel of petroleum products increased from $2.33 to $2.36.

The Dalhousie Oil Company, Limited, reported a 1936 net profit of $10,480.15, bringing the earned surplus to $27,549.98. The company sold 1341 barrels of crude oil and 5091 barrels of naphtha during the year and processed tail gas in the natural gasoline plant of Royalite Oil Company, from which the year's total income of $30,956.88 was obtained.

The Foothills Oil & Gas Company, Limited, reported a net profit of $7,855.85 for 1936 after allowing $1,709.24 for depletion and $6,491.24 for depreciation. Total income was $17,373.28.

Southwest Petroleum Company, Limited, reported a deficit from 1936 operations of $4,002.79, to which had to be added $260.80 in salaries for executive officers and $3,737.22 for depreciation, bringing the 1936 loss to $8,000.81.

British American Oil Company, Limited, despite increased Canadian sales in 1936, earned, after interest, depreciation and taxes, 95 cents a share on Canadian operations, as compared to $1.10 a share in 1935. By taking a gross income of $1,400,000 from United States subsidiaries, the company was able to show income of $1.41 a share available for common stock. Regular and bonus payments during 1936 totaled $1 a share, and that rate is now regular. Total earned surplus increased during the year from $8,700,000 to $9,700,000.

Prairie Cities Oil Company, Limited, reported net profit of $2,114 for 1936 compared with $775 for the previous year. Operating profits were $132,263, against $126,212 for the previous year.

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SIX TO EXHIBIT

Companies to participate in Dallas Exposition

Dallas. — Six major oil companies have announced they will take an active part in the Pan American Exposition scheduled to run in this Texas city June 12 through October 31.

Humble Oil & Refining Company, The Texas Company, Magnolia Petroleum Company, Continental Oil Company and Sinclair Refining Company will have exhibits, while Gulf Oil Corporation will operate the exposition's radio broadcasting and public address system.

The oil section of the exposition will not only be devoted to the oil business within the United States but will have exhibits dealing with the oil industry of Mexico and Central America. Central American fields will be reproduced in miniature in the building of Humble Oil & Refining Company, which will also house exhibits of oil field equipment manufacturers and supply houses. The Humble exhibit will become property of the University of Texas at the close of the exposition.

Start Plant Near Bryson

Fort Worth.—Construction of a 1000-barrel capacity crude skimming plant near Bryson, Texas, has been started by Hoffman, Peters and Lillard to operate on high gravity crude produced in the East Bryson field, Jack County. The plant site is a short distance southeast of the town, and on the Rock Island Railroad.

Optimism Prevails

OPINION PERSISTS THAT CRUDE PRICE RAISE SOON TO OCCUR

AN optimistic attitude prevails generally regarding the oil industry's markets. Prices have remained steady, and there are some expectations of increases.

Tank car prices of refined products last week were largely unchanged from a week before. But tank wagon and retail prices of gasoline had ben marked up in various districts of the country.

Crude Raise Talked

Opinion persists in some quarters that crude prices will be increased. However, it hardly seems likely that such an increase wil materialize for several weeks at least, during which time statistics will become available showing recent and current results regarding balancing of crude production with demand.

In February and March crude production was conspicuously excessive, resulting in steady additions to storage. For April, allowables in the leading producing states were in closer conformity with the Bureau of Mines estimates of demand. But it remains to be seen exactly what effect the stricter allowables wil have on crude stocks, and whether additions to storage will be eliminated.

Similarly, it seems likely that the leading producing states will adhere closely to the Bureau of Mines recommendations in fixing allowables for May. If they do, the prospects for a crude raise would be increased.

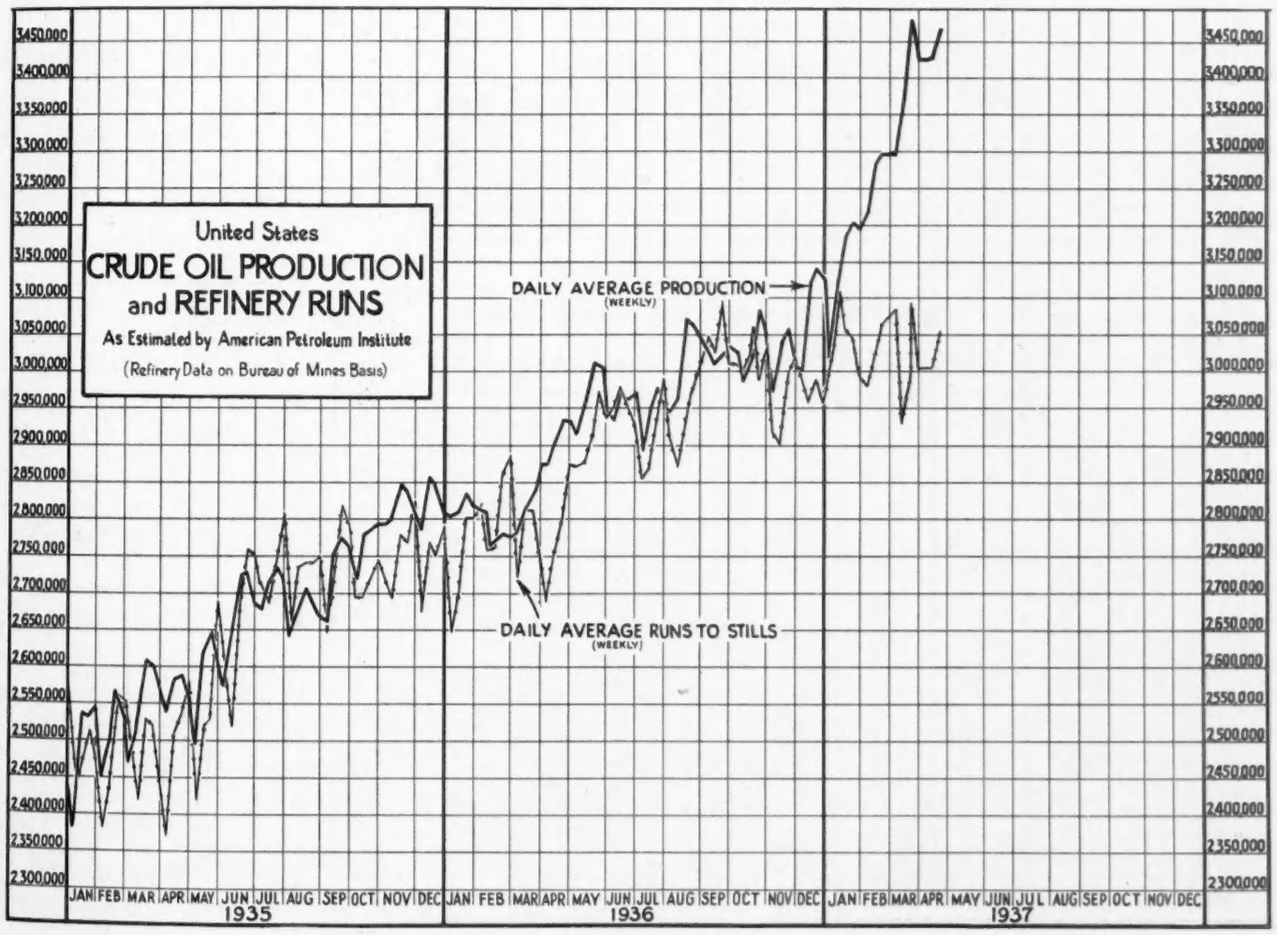
Better Product Prices

One of the chief factors working against an immediate increase in crude postings is the fact that product prices have hardly improved in proportion to the Mid-Continent crude raise of late January. It is contended by some that it would not be economically sound to attempt a further increase of crude prices until product prices "catch up" with the present crude postings.

However, last week brought some of the "catching up," in the form of advances of tank wagon and service station prices of gasoline in some areas.

The tank wagon prices of gasoline in the Oklahoma City area were increased one cent a gallon, or to 13, 15 and 16½ cents a gallon, effective April 19; and retail prices at the same time were raised to 16 and 17 cents for third grade, 19 cents for middle or standard grade, and 21 cents for premium grades. It was stated that some of the independent dealers of the area who had been under-selling earlier in the year, fell in line with the new postings.

Service station prices of gasoline were increased by numerous dealers



around April 19 also in New York City and northern New Jersey. The prevailing price was increased in New York from 98 cents to $1.05 for 6 gallons, including taxes.

Evidence of Increase in Stocks

Latest statistics on the oil industry's operations have included evidence of another increase in crude oil stocks, for the week ended April 10. The stocks had been increasing every week for 11 weeks, in which time a total of over 12,000,000 barrels of crude was added to storage. For the week of April 17 another addition to crude stocks seems likely, as crude output was at all-time record proportions for the week. However, runs to stills for that week also were higher, and all, or nearly all, the new supply of crude may have been absorbed.

For the week ended April 17, refinery operations were greater than justified, and gasoline stocks were increased 124,000 barrels, whereas the normal trend of gasoline inventories for this time of year is downward, with demand running seasonally high.

CRUDE PRICES

Complete table of prices paid for crude oil at the well in principal fields will be found on page 96 of The Oil Weekly, April 5, 1937. Hereafter this schedule will appear only in the first issue of each month except when changes are announced.

Tank Car Prices Same

Prices of petroleum products at refineries late last week were largely unchanged from a week before.

Gasoline tank car prices in the Mid-Continent were the same, generally, as in the previous week. The U. S. motor gasoline f.o.b. Oklahoma refineries continued at 5 to 5¼ cents a gallon for the 62 octane and below, 5⅜ to 5½ cents for the 63 to 67 octane and 6 to 6¼ cents for the 68 to 70 octane.

Corresponding prices in the Chicago market were 5 to 5⅛ cents, 5¼ to 5⅜ cents, and 5¾ to 6 cents.

In East Texas continued heavy demand caused a further strengthening of the gasoline market, and the prevailing price for the 60-62, 400 end point gasoline most common on the market was 5¼ cents a gallon. A week before some had been selling as low as 5⅛ cents.

Kerosene and Fuel

The kerosene market has been particularly firm lately, as demand has been increasing for spring agricultural activities. Tank car prices f.o.b. Oklahoma refineries ranged from 4⅛ to 4⅜ cents for the 41-43 water white grade, and from 4⅜ to 4½ cents for the 42-44 water white grade.

Tank car prices of fuel oils have remained mostly unchanged.

Weekly Trends of United States Production and Stocks

(Figures American Petroleum Institute, except crude stocks, Bureau of Mines.)

WEEK ENDED—	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	Gas & Fuel Oil Stocks (Barrels)
January 2, 1937	3,121,400	3,030,000	287,659,000	62,661,000	106,330,000
January 9	3,117,800	3,110,000	286,912,000	65,402,000	105,971,000
January 16	3,184,650	3,045,000	286,044,000	66,559,000	104,841,000
January 23	3,205,150	3,055,000	285,211,000	68,180,000	103,441,000
January 30	3,194,050	2,995,000	285,384,000	69,540,000	102,078,000
February 6	3,220,750	2,980,000	286,116,000	70,535,000	101,136,000
February 13	3,286,050	3,020,000	286,158,000	73,585,000	100,735,000
February 20	3,295,950	3,065,000	287,574,000	74,798,000	99,391,000
February 27	3,296,100	3,085,000	288,121,000	78,786,000	99,534,000
March 6	3,298,800	2,930,000	289,611,000	80,102,000	99,115,000
March 13	3,372,850	2,985,000	290,613,000	81,226,000	98,964,000
March 20	3,448,150	3,095,000	291,555,000	81,623,000	97,287,000
March 27	3,431,300	3,060,000	293,587,000	*83,538,000	96,591,000
April 3	3,422,350	3,005,000	297,374,000	83,157,000	95,805,000
April 10, 1937	3,426,300	3,005,000	297,468,000	82,579,000	94,581,000
April 17, 1937	*3,463,550	3,055,000	.....	82,703,000	94,472,000
April 18, 1936	2,935,200	2,795,000	313,045,000	73,015,000	96,754,000

*All-time peak.

Summary of Wells Completed in the United States Week Ending April 24, 1937

	Completions	Oil Wells	Gas Wells	Failures	Initial Production	Total 1937	Total this Date, 1936
Alabama	....	....	....	....	.....	1	2
Arkansas	5	2	1	2	100	26	30
California	36	31	....	5	14,495	398	297
Colorado	....	....	....	....	.....	6	5
Florida	....	....	....	....	.....	....	.....
Illinois	9	4	2	3	125	20	4
Indiana	6	2	1	3	11	39	87
Kansas	68	50	1	17	62,806	704	458
Kentucky	2	1	....	1	50	57	56
Louisiana	15	9	2	4	2,633	212	306
Michigan	....	....	....	....	.....	243	211
Mississippi	....	....	....	....	.....	6	1
Montana	2	....	2	....	.....	26	30
Nebraska	....	....	....	....	.....	....	.....
New Mexico	12	12	....	....	16,934	213	148
New York	....	....	....	....	.....	3	.....
Ohio	25	4	11	10	13	495	643
Oklahoma	56	36	2	18	37,741	918	831
Pennsylvania	6	2	4	....	4	53	.....
Texas	334	249	6	79	284,031	4,407	3,668
Utah	....	....	....	....	.....	....	.....
West Virginia	13	2	10	1	30	263	226
Wyoming	2	2	....	....	2	34	15
Total this week	591	406	42	143	418,975	8,124	7,007
Total last week	534	396	31	107	456,405	.....	.....
Total this year	8,124	5,491	715	1,918	6,904,383	.....	.....

Plan Two West Texas Plants

Midland, Texas.—Cabot Carbon Company, major producer of carbon black in the Texas Panhandle, will start construction work shortly on a well-pressure type absorption natural gasoline plant about midway between the Kermit (Sayre) and Keystone fields, Winkler County, and will purchase gas from both fields. Plant site is on J. B. Walton ranch, Section 4, Block B-3, PSL Survey, near railroad. Erection of a large carbon black plant on an adjoining site to burn residue gas from the above plant, and from natural gasoline plants operated in the Kermit (Sayre) field by Magnolia Petroleum Company and Smith Brothers Refining Company, Inc., has also been authorized. Cabot Carbon Company's carbon black plant under construction near Monahans, northern Ward County, is about 75 percent complete. It will handle about 20,000,000 feet of residue gas daily from Gulf Refining Company's natural gasoline plant.

San Angelo, Texas.—Comanche Pipe Line Company, Monahans, has completed and placed in operation a 13-mile 2-inch crude line from the Masterson shallow field, Pecos County, to the Pecos Valley field, where connection is made with the company's line that has been delivering Pecos County crude to Atlantic Pipe Line Company's main line station, near Grand Falls, Ward County.

Comanche Pipe Line Company is owned by Arnold Kirk, Fort Stockton, and John Ratliff.

Comparison of Permits Granted For New Wells

STATE	Week Ending April 24	Total this Mo.	Total this Year	Total this Date Last Year	1936 Year Total
Arkansas	4	21	56	28	103
California	29	142	454	277	1,054
Louisiana	20	80	292	376	1,107
Kansas	80	245	758	532	1,873
Michigan	....	....	282	186	762
Oklahoma	71	277	888	933	2,594
Texas	417	1,444	5,536	4,175	15,582
Total	621	2,209	8,266	6,507	23,075

Output at Peak

PRODUCTION RISES 55,425 TO 3,481,850 BARRELS

UNITED STATES crude oil production during the past week, ended April 24, exceeded all previous records, averaging 3,481,850 barrels daily. That was 55,425 barrels a day more than was reported in the previous week, and 238,850 barrels daily more than the Bureau of Mines recommendation for April.

The increase was the result of larger output in all of the six leading producing states except New Mexico; gains having been reported for Texas, Oklahoma, Kansas, California, and Louisiana.

The Texas output last week averaged 1,372,400 barrels daily, or about 20,000 barrels a day more than in the previous week. That was 74,500 barrels a day more than the Bureau of Mines suggestion.

Oklahoma last week averaged 670,650 barrels daily, which was 13,250 barrels a day more than in the previous week and 61,050 barrels a day more than the federal allocation.

Kansas showed a 5350-barrel increase in averaging 197,925 barrels a day, which was 14,925 barrels a day more than the federal quota.

California production last week was 7000 barrels a day higher than in the previous week, having averaged 628,000 barrels daily, or 48,100 barrels a day more than the Bureau of Mines recommendation.

Louisiana production was up 3550 barrels at 248,900 barrels daily, and showed an excess of 4100 barrels over the daily average recommended for the month by the federal department.

New Mexico last week averaged 106,200 barrels daily, which was 100 barrels a day less than in the previous week and 14,800 barrels a day more than the federal allocation.

Increase Corpus Facilities

Corpus Christi. — Additional storage and oil terminal facilities are being provided to the Corpus Christi port as a result of new projects announced or already under way.

Barnsdall Refining Company has filed application with the United States district engineer at Galveston, Lieut. Col. E. H. Marks, for a war department permit to construct a $500,000 oil dock, crude oil terminal and pipe line to the south side of the Corpus Christi industrial canal, between the main turning basin and Avery Point turning basin. The company will construct a double bulkhead approach fill 952 feet long and 20 feet wide on which to carry pipe lines to the oil dock. The dock will be 110 feet long and 20 feet wide with pile clusters for mooring tankers. An area in front of the dock will be dredged to a depth of 30 feet below water surface at mean low tide.

Two 80,000-barrel storage tanks, costing approximately $50,000 will be constructed by The Texas Company at its terminal on the north side of basin. Construction of these tanks will bring the storage capacity of The Texas Company at tide level to 775,000 barrels. There are seven 80-000-barrel tanks and one 55,000-barrel tank at the terminal now used for storage.

Approximately 8500 barrels is the loading capacity of the present pipe lines to oil docks Nos. 1 and 2. A 16-inch, 12-inch and 8-inch pipe line lays from storage to both docks. Present storage facilities have a capacity of 615,000 barrels.

United States Crude Oil Production

Estimates Compiled by The OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Recommendation (Daily in April)	ACTUAL PRODUCTION: BARRELS DAILY FOR WEEK ENDING April 24	April 17
TEXAS—			
Texas Panhandle	.....	74,800	70,200
North Texas	.....	70,600	66,600
West Central Texas	.....	33,100	32,600
West Texas	.....	198,700	190,200
East Central Texas	.....	116,700	112,100
East Texas Field	.....	458,500	457,400
South Texas	.....	223,200	227,800
Texas Gulf Coast	.....	196,800	194,400
Total Texas	1,297,900	1,372,400	1,351,300
OKLAHOMA—			
Oklahoma City	.....	172,400	167,225
Seminole Area	.....	132,000	133,100
Crescent	.....	15,925	15,050
Lucien	.....	13,650	14,350
Fitts	.....	98,900	94,475
Edmund	.....	22,700	20,075
Moore	.....	15,800	14,500
Others	.....	199,275	198,625
Total Oklahoma	609,600	670,650	657,400
KANSAS—			
Ritz-Canton	.....	5,500	5,550
Chase	.....	8,875	9,075
Hollow-Nikkel	.....	3,700	3,775
Sedgwick	.....	3,857	4,050
Burrton	.....	15,857	16,150
Lorraine	.....	5,475	4,850
Russell County	.....	30,200	28,775
Silica	.....	21,450	20,220
Others	.....	102,975	100,150
Total Kansas	183,000	197,925	192,575
LOUISIANA—			
North Louisiana	.....	70,500	69,750
South Louisiana	.....	178,400	175,600
Total Louisiana	244,800	248,900	245,350
ARKANSAS	27,400	27,175	26,600
CALIFORNIA—			
Long Beach	.....	61,000	61,000
Santa Fe Springs	.....	44,500	44,500
Huntington Beach	.....	38,000	38,500
Dominguez	.....	24,000	26,000
Inglewood	.....	15,000	11,500
Ventura Avenue	.....	38,000	34,500
Seal Beach	.....	9,000	9,000
Midway-Sunset	.....	71,000	72,000
Elwood	.....	9,500	9,500
Kettleman Hills	.....	76,000	80,000
Mountain View	.....	20,500	21,000
Playa del Rey	.....	9,000	9,500
Others	.....	212,500	204,000
Total California	579,900	628,000	621,000
MOUNTAIN STATES—			
Wyoming	44,000	53,600	51,600
Montana	14,600	15,700	15,200
Colorado	4,800	4,200	4,000
Total Rocky Mountain States	63,400	73,500	70,800
NEW MEXICO	91,400	106,200	106,300
EASTERN STATES	115,000	115,300	114,200
MICHIGAN	30,600	41,800	40,900
Total United States	3,243,000	3,481,850	3,426,425

WORLD DEVELOPMENT and TECHNOLOGY

Edited by
WM. V. GROSS, Associate Editor

Deny Bolivia Fraud

PROPERTY SEIZURE BASED ON SUBTERFUGE, OFFICIALS SAY

New York.—Officials of Standard Oil Company of New Jersey April 22 vehemently denied accusations of fraud made the basis of the seizure of its properties in Bolivia by the government of Bolivia and declared that the incident on which the seizure was based was only a subterfuge.

They asserted that questions of taxes raised by the government and called fraud constitute a difference of opinion in interpreting what is commercial production on the scale contemplated by the concession the company has in Bolivia, which question is now in litigation in Bolivian courts.

$17,000,000 Investment Involved

Investment of the Standard Oil Company of New Jersey in Bolivia is set at $17,000,000. All Company properties have been seized, offices, refineries, fields and bank accounts have been taken over

The incident on which the confiscation is based occurred in 1925 and 1926, and, company officials say, took place with the full knowledge and consent of the governments of both Argentina and Bolivia. At that time the company had developed some production in Bolivia on a structure on the Bolivia-Argentina border and was preparing to drill a well on a concession held on the structure on the Argentinian side of the line. A two-inch pipe line was laid to move fuel oil across the line, which consisted of a small stream. A total of about 4000 barrels of oil was thus moved for fuel.

Move Was Legal

Company officials declare that the move was entirely legal and that, taking place with the knowledge of the Bolivian government, met with no objection on the government's part. This is the "international pipe line scandal" referred to in the press and declared false by an official investigating committee of the Argentine government in December, 1935.

Now governmental officials claim that the removal of the oil from the Bolivian side put the structure on the Bolivian soil "in commercial production," and involved a change in status which the company does not recognize.

The decree confiscating all properties of the Standard in Bolivia, issued by the military Junta government which came into power at the close of the Bolivia-Paraguay war over the Chaco, claims fraud on the ground that the company did not declare the movement of oil out of Bolivia as "production" under the concession contract and asserts that a clause in the contract originally made gives the government the right to take possession of all company properties in Bolivia.

Bolivia the Violator

From a legal standpoint, the company, through its South American representatives, has called attention to a clause in the modified contract which it signed, specifically inserted as a protection, before operations were started, which provides that in event of claim of anything which in the judgment of the government constitutes non-compliance of the contract, the company shall have six months within which to remedy the situation arising out of the claim and that in the event of the failure of the company to do this within six months, the government shall issue the corresponding resolution to obtain compliance, and the company shall retain the right to resort to the courts for ruling.

Government Rejects

Formal representations on the basis of this clause have been made to high officials of the Bolivian government, but the government has rejected this viewpoint and has carried through its confiscation of the properties.

Company representatives have reported that it is apparent that the removal of the 4000 barrels of crude oil was only a pretext and that had no oil been moved, government officials intimated that other means would have been found to cancel the concession.

Reports on the situation indicate that the Bolivian government has been offended because the Standard Oil Company of Bolivia, during the recent war, did not get into production of aviation gasoline as quickly as the government desired, that the government claimed that the company failed to provide as large an amount of naptha as the government needed, and that following the war the company did not make a loan requested of it by the government.

Other Points of Complaint

Other points of complaint were that the company had not entered into certain plans for the development of large production on one structure with the ultimate idea of moving 24,000 barrels of crude per day out of the country. Company officials state that the structure in question could not possibly produce the amount of oil requested.

Bolivia is governed by a military junta, headed by Colonel Toro, who took over the government after the last revolution. No election has been held and there is no congress. Laws are issued in the forms of decrees. Policy of the government is reported along national socialistic lines. The supreme court of Bolivia has been named by the military junta.

Conversations between governmental and company officials lasted several days. The president indicated a willingness to consider returning the bank accounts of the company in order that it might handle its outstanding obligations in the republic.

Officials of the company declare that its investment in Bolivia was started when the price of crude oil was much higher than it is now, and that with the import tax in effect in Argentina—the natural point through or to which Bolivian oil must move—Bolivia simply holds the position of a reserve against the day when world crude oil markets are much better. They ascribe this situation as the reason why drilling developments have not been greater.

NO COMPETITION

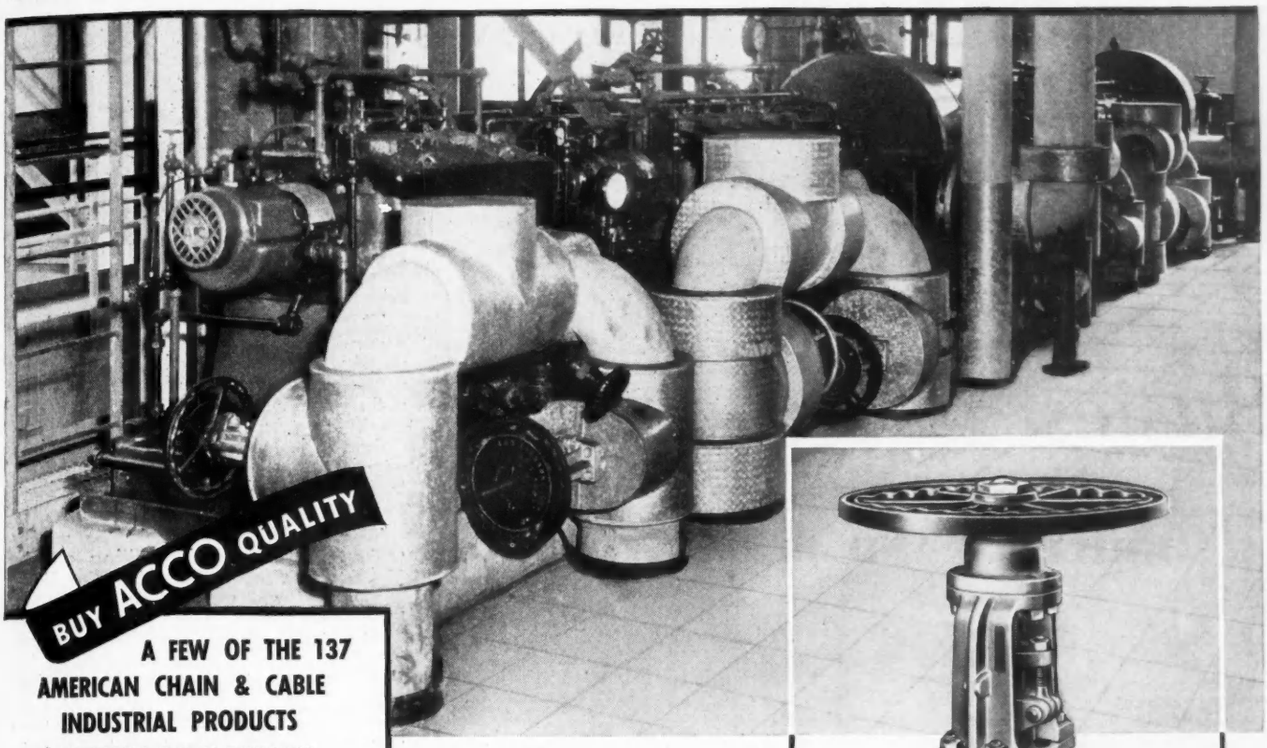
Cardenas is expected to modify petroleum law

President Cardenas of Mexico, according to an item appearing in a recent issue of The Wall Street Journal, was expected to order modifications of the government petroleum law which would limit the government organization there to supplying oil and oil products to official and semi-official enterprises only, thus preventing it constituting competition with private operators.

At the time the item was written,

Here's why "valve-wise" engineers

SPECIFY READING STEEL VALVES...



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President Cardenas had just returned from a tour of the provinces and it was thought that he would bring about an agreement between capital and labor in the oil industry on a basis involving some concessions by both factions.

However, since that time, word has been received that conversations between the oil company representatives and those of the labor unions have temporarily halted to allow stenographers sufficient time to catch up with their notes.

The Union of Employees of the Federal District of Mexico is urging upon the central department enforcement of the labor law clause which demands that all commercial and industrial establishments must have 90 percent of their personnel Mexicans.

Mexico's economy ministry has approved establishment of a federal chamber for the oil industry. The chamber will be concerned with matters connected with production, refining, and distribution of petroleum products and such companies and their officials may be members of the chamber.

ADD TO RESERVES

Several thousand hectares in Tamboyoche, Veracruz, Mexico, have been incorporated in the federal petroleum reserves, rights to the land having been relinquished by Sabalo Transportation Company. Five parcels of petroleum lands were involved in the transfer.

Busiest in History

WESTERN CANADA HAS 39 TESTS DRILLING AND 40 LOCATIONS

WITH 25 wells drilling along a 15-mile front and two score more to be spudded within the next two months, oil development in Turner Valley, Alberta, is at the highest point in the history of Western Canada. Fourteen additional wildcat wells are drilling on West Canadian structures, several quite distant from the proven areas.

North American Petroleums and Sunset Oils Limited spudded late last week, while Three Point Petroleums and No. 2 of Davies Petroleums, Limited, both spudded a week ago, were making good progress—Three Point was below 375 feet and Davies Petroleums' No. 2 below 450 feet. The Sunset test started with cable tools and will be finished with rotary.

Watching Richland Wells

Richland Oil Company's No. 3, deepest active Turner Valley well, is down 5300 feet, approximately 400 feet from the lime. Six-inch casing for completion is on location and operators hope to have a test within three weeks. The three Richland wells are the center of Turner Valley interest, located near the three largest producers in Canada—Turner Valley Royalties, Limited, B. and B. Royalties, and Royalite Oil Company's Sterling Pacific 4.

Richland's No. 2 is drilling at the 3400-foot level, after setting casing at 3250 feet; No. 1 is drilling below 2000 feet after setting 16-inch casing. Three of the latest design cable tool outfits are being used at the Richland wells and new drilling lines for each well have been spooled. Drilling crews are being supervised by Roy Widney, drilling contractor.

Next to Richland 3, deepest Turner Valley test drilling is that of Monarch Royalties, Limited, which is down 3165 feet. Drilling is by the Anglo Canadian Development and Holding Company, Limited, is doing the drilling.

Rich-Well Oil Company's No. 1, located on the extreme south of the Turner Valley structure, will probably be the next spudded in this area.

Following is the situation at other active Turner Valley wells as the week closed:

Status of Active Wells

Brown Oil Corporation, Ltd.'s No. 1, drilling at 1235 feet; No. 2, drilling at 1362 feet; Commoil, drilling at 1250 feet; Davies Petroleums, Ltd.'s No. 1, drilling at 550 feet; Firestone Petroleums, Limited, drilling at 362 feet; Globe Oil Company, drilling at 300 feet; Granville Oil Company, drilling at 1805 feet; Mercury Royalties, Limited, drilling at 2814 feet; Mercury Oils, Ltd.'s No. 8, drilling at 2755 feet; National Petroleum Corporation, Ltd.'s No. 2, drilling at 200 feet; Phillips Petroleum, drilling at 2400 feet; Prairie Royalties, Limited, drilling at 1880 feet; Royal Crest, drilling at 701 feet; Royalite Oil Company's Sterling Pacific 5, drilling at 2713 feet; Share Royalties, drilling at 750 feet, and Sunburst, drilling to 850 feet.

Those Due to Spud

Among Turner Valley wells scheduled to spud within the next few weeks, many of which have cellars dug and derricks erected, are: Alco Oils, Limited; Alturner Oils, Limited; Admiral; Apex; British Trans-Canada Oils, Limited; Brown Oil Corporation, Ltd.'s No. 3; Calberta Petroleums, Limited; Central Turner; Command Oils, Limited; Consolidated Oil Company, Limited; Coronation Royalties, Limited; D. and D. Company, Limited; Del Bonita Associated Oils, Limited; Economy Royalties, Limited; Frontier Royalties, Limited; Kermac Petroleums, Limited; Lethbridge Petroleums, Limited; Marine Petroleums, Limited; Model Oils, Limited-Spooner Oils, Limited-Reward Royalties; Mutual Oil Company; National Petroleum Corporation, Ltd.'s No. 1; Okalta Oils, Limited; Revenue; Roxana Petroleums, Limited; Royal Canadian Oils, Limited; Shamrock Petroleums, Limited; Soturn Oils, Limited; Spy Hill Royalties, Limited; Sunalta Petroleums, Limited; Sundance Royalties, Limited; Union Drilling & Development Company, Limited; Vantage; Virginia; West Crest Petroleums, Limited; West Flank Petroleums, Ltd.'s Nos. 1 and 2; West Turner; Woodhall; York Oils, Ltd.'s Nos. 1 and 2.

Wildcat to Test

Outside Turner Valley, the wildcat of Weymarn Petroleums, Limited, on the Pincher Creek structure, commanded interest. Down 5960 feet where oil showings are reported, casing is to be run in preparation for a production test. Location is Legal Subdivision 5, Section 7, Township 6.

The Marquis Oil Company has been organized to open the well started years ago by the Marquis of Anglesey, who returned to the old country after taking a fling at Alberta oil. Located on the De Winton structure, 20 miles south of Calgary, it was drilled to 4500 feet, where it has been standing since 1928. It is to be drilled to Paleozoic limestone.

The formation in which Roxana Petroleums, Limited, is drilling on the Kootenay Dome resembles the Banff shales. These overlie the Devonian limestone and oil is anticipated either in the shales or at the contact with the Devonian lime. The well is drilling below 2467 feet, located on Legal Subdivision 5, Section 18, Township 24.

Other active West Canadian wildcats include Del Bonita Associated Oils, Limited, on the Twin River structure, Legal Subdivision 9, Section 10, Township 2, rigging at 3990 feet; Imperial Oil Company, Ltd.'s, Arca Development 1, High River-Aldersyde structure, Section 24, Township 18, drilling below 8840 feet; Spindletop Oils, Limited, drilling at 100 feet.

To Spud on Steveville Structure

Anaconda Oil Company, Limited, will commence drilling late in May on the company's holdings on the Steveville structure, 66 miles due east of Gleichen, according to A. J. Scott, managing director. Operators hope to reach the limestone at 4200 feet, but producing horizons may be encountered between 3300 and 3400 feet, according to geological reports. It will be a test of an entirely new structure, only one other well having been drilled and this to only 100 feet.

Amid impressive ceremonies in which prominent civic leaders and oil men participated, operations on the new proposed 4000-foot MacIntosh Oil & Gas Company test, located on the flats at the east end of Petrolia, Ontario, were started on April 15. The site is approximately 100 feet southwest of the site on which the first oil well on the North American Continent was drilled. At one time various United States citizens were interested in this field, but when oil decreased to 10 cents per barrel they lost interest. Credit for restarting exploration interest is given to Frank R. MacIntosh, president of the company, who returned to the region two years ago. He went to the United States when a youth and prior to his return to Canada served as minister of oil and labor in Michigan.

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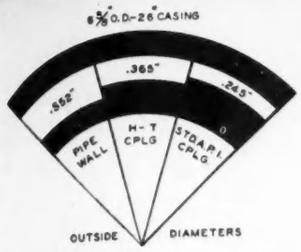
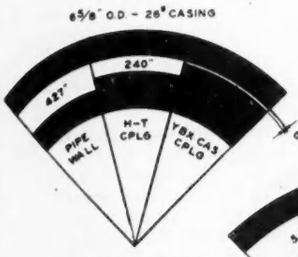


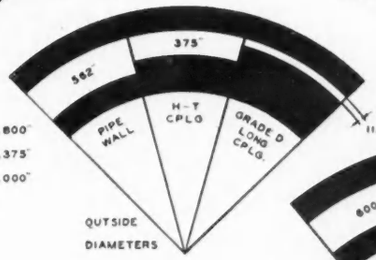
OUTSIDE DIAMETERS

STANDARD A.P.I. COUPLING	5.364"
YOUNGSTOWN H-T COUPLING	5.125"
PIPE OR FLUSH JOINT	4.750"



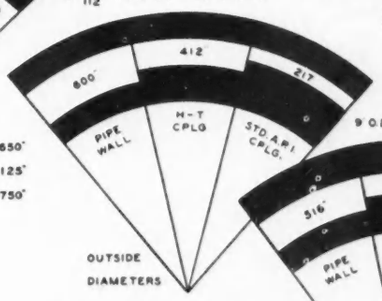
OUTSIDE DIAMETERS

YBX CASING COUPLING	5.800"
YOUNGSTOWN H-T COUPLING	5.375"
PIPE OR FLUSH JOINT	5.000"



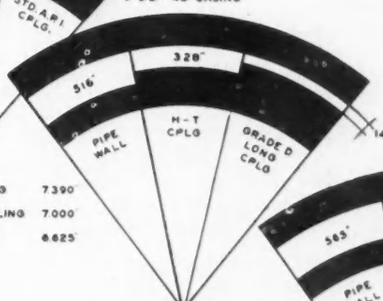
OUTSIDE DIAMETERS

GRADE D LONG COUPLING	6.650"
YOUNGSTOWN H-T COUPLING	6.125"
PIPE OR FLUSH JOINT	5.750"



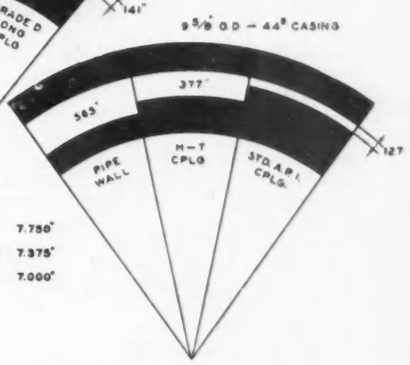
OUTSIDE DIAMETERS

STANDARD A.P.I. COUPLING	7.390"
YOUNGSTOWN H-T COUPLING	7.000"
PIPE OR FLUSH JOINT	6.625"



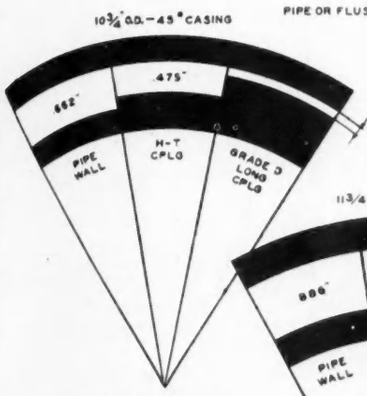
OUTSIDE DIAMETERS

GRADE D LONG COUPLING	7.750"
YOUNGSTOWN H-T COUPLING	7.375"
PIPE OR FLUSH JOINT	7.000"



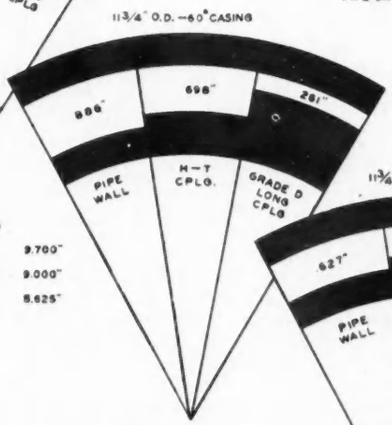
OUTSIDE DIAMETERS

STANDARD A.P.I. COUPLING	8.500"
YOUNGSTOWN H-T COUPLING	8.000"
PIPE OR FLUSH JOINT	7.625"



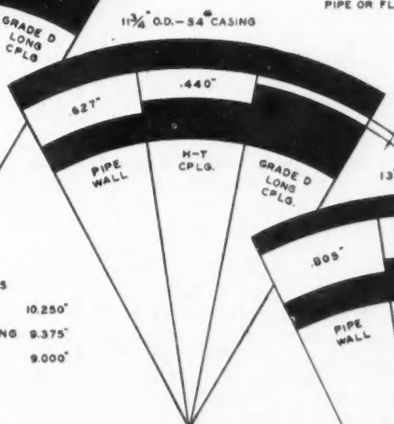
OUTSIDE DIAMETERS

GRADE D LONG COUPLING	9.700"
YOUNGSTOWN H-T COUPLING	9.000"
PIPE OR FLUSH JOINT	8.625"



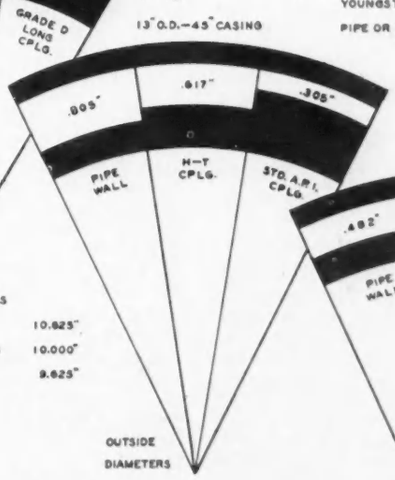
OUTSIDE DIAMETERS

GRADE D LONG COUPLING	10.250"
YOUNGSTOWN H-T COUPLING	9.375"
PIPE OR FLUSH JOINT	9.000"



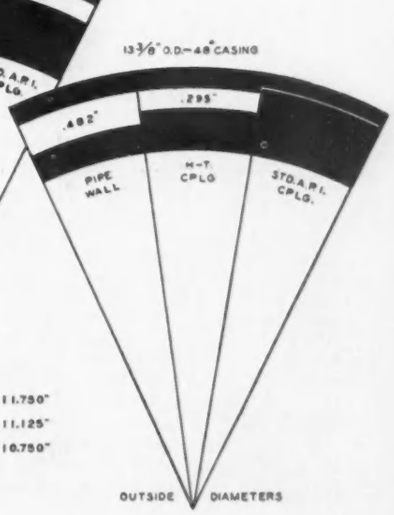
OUTSIDE DIAMETERS

GRADE D LONG COUPLING	10.625"
YOUNGSTOWN H-T COUPLING	10.000"
PIPE OR FLUSH JOINT	9.625"



OUTSIDE DIAMETERS

STANDARD A.P.I. COUPLING	11.750"
YOUNGSTOWN H-T COUPLING	11.125"
PIPE OR FLUSH JOINT	10.750"



OUTSIDE DIAMETERS

STANDARD A.P.I. COUPLING	12.886"
YOUNGSTOWN H-T COUPLING	12.125"
PIPE OR FLUSH JOINT	11.750"

Clearance diagrams on this page approximately 2-5 actual size

OIL COUNTRY TUBULAR GOODS — TRADE MARK — YOUNGSTOWN

OKLAHOMA FIELDS

Good well extends Airport field to the southwest.

* * *

Large wells at Crescent, Billings, Moore and Lucien.

* * *

Northward Tussey extension causes new drilling.

Oklahoma City.—Phillips Petroleum Company's Channell 1, NEc NW 33-17n-4w, Crescent pool, Logan County, made a 24-hour potential of 1368 barrels of oil by heads. Production was from Wilcox sand at 6565 feet. It was acidized with 3000 gallons, and when opened flowed 374 barrels of oil the first hour, then averaged 93 barrels an hour with the gas increasing from 6,000,000 to 12,000,000 cubic feet. It may be re-acidized with 10,000 gallons. Total flow for a 4-hour period was 732 barrels. Gas later increased to 13,000,000 cubic feet.

Mid-Continent Petroleum Corporation's Campbell 6, NE SE NE 33-17n-4w, was shot with 40 quarts in Wilcox sand between 6100 and 6120 feet, with no apparent increase in production. It was flowing about 10 barrels of oil an hour through tubing on gas lift. During a later 23-hour period, it flowed 220 barrels through casing on gas lift, and made a 24-hour potential of 272½ barrels.

The Texas Company's Denny 5, NE NW SE 33-17n-4w, topped Wilcox sand at 6288 feet and drilled to 6303 feet. On gas lift, with 600 pounds pressure, the well did not make any oil or gas. Pressure was through drill pipe.

Stanolind Oil & Gas Company and Amerada Petroleum Corporation's State 2, NE SE SW 16-10n-2w, in the Moore pool of Cleveland County, drilled to 7260 feet in Wilcox sand and flowed 70 barrels of oil in 20 minutes through casing. Pinched in on tubing, it flowed 536 barrels in 24 hours.

Moore Outpost

Carter Oil Company's Hall 1, NW SE SW 27-10n-2w, on the southeast edge of the Moore pool, has started. Location for the test was staked in November, 1936, but operations were suspended because of the disappointing showings had in nearby tests. It is an east offset to Gulf Oil Corporation's Allen 1, recently completed for 3600 barrels of oil at 7216 feet in the Dolomite, and is also a south offset to Carter's Walker 1, completed for 30,000 barrels of oil.

Sinclair Prairie Oil Company's Bagby 2, NE SW NW 27-10n-2w, drilled from 7296 to 7310 feet and flowed 1383 barrels of oil in 5 hours with 11,000,000 cubic feet of gas. It had first drilled to 7292 feet in Simpson sand, topped at 7020 feet, and tested, flowing 100 barrels of oil in 1 hour, with 4,000,000 cubic feet of gas. Drilled ahead, it topped the Wilcox sand at 7305 feet and drilled to 7310 feet where it made 300 barrels of oil per hour from Wilcox and Simpson sands, and gauged 12,000,000 cubic feet of gas.

Gulf Oil Corporation's James 2, SE NW SW 27-10n-2w, topped the Wilcox sand at 7275 feet and drilled to 7281 feet where it made a 24-hour potential of 19,817 barrels of oil, cut with 30 percent water, then went dead. It was cored from 7281 to 7289 feet and recovered 8 feet of Wilcox sand with white streaks. James 3, SE NW SW 27-10n-2w, topped the Checkerboard lime at 5460 feet; had the Oswald lime at 6445 feet and drilled to 6639 feet where it was shut down with the drill stuck in the hole.

Champlin Refining Company's Pfeiffer 2, C N½ N½ NW 4-19n-2w, in the Lucien pool of Noble County, was shut in for tankage. It had drilled to 5017 feet and flowed 2084 barrels of oil in 14 hours from the Wilcox sand. When deepened to 5022 feet, the well flowed 200 barrels an hour.

Shell Petroleum Corporation and Phillips Petroleum Company's McCaughtry 9, SWc NE 21-23n-2w, in the Billings pool of Noble County, flowed 822 barrels of oil in 6 hours from Wilcox sand at 4323 feet. McCaughtry 8, SE NE NE 21-23n-2w, made a potential of 5269 barrels of oil in 24 hours and had 2,500,000 cubic feet of gas. It flowed 1585 barrels of oil the first 6 hours, from 4309 feet.

Ohio Oil Company's Rankin 3, NW SE SW 31-13n-3w, at Edmond, Oklahoma County, drilled to 6710 feet and while testing made 428 barrels of oil in 21 hours. Testing was being continued. The company's Dahl 14, SE NE SE 31-14n-3w, was drilling below 3840 feet.

At Oklahoma City, Sunray Oil Company and Phillips Petroleum Company's State 13, in the state capitol area, was drilling in at 6440 feet and making 35 barrels of oil per hour.

Bryan Development Company's Howe 2, at Northwest Fifteenth Street and Phillips Avenue, started a potential test April 21, but gauged on 7.62 barrels of oil, due to a faulty pump. It was waiting on repairs at 6514 feet. Howe 1, at Sixteenth Street and Lindsay Avenue, was flowing 15 barrels of oil an hour from 6522 feet, and was underreaming before taking a potential.

Anderson-Kerr Drilling Company's Kaye Dawson 1, at Thirteenth and Lincoln Boulevard, averaged 20 barrels of oil an hour potential gauge with drill pipe in the hole, at 6549 feet.

Airport Demands Notice

Tulsa.—While Fitts continued to be the steadiest and best producing area in Oklahoma last week, a much closer watch was on the new Airport pool, northeast of Tulsa. Definite extension of the area was made last week at Pitts' W. W. Day 1, in lot 4, block 1, of Fairland addition, near NEc SE SE 34-20n-13e, on a southwest trend from the heart of the field. Free oil was bailed at 1097 feet, and it was shut down for a time. It was later drilled to 1102 feet, and given a 110-quart shot, when it headed up and flowed over the 75-foot mast for more than 5 minutes, filling the slush pit and overflowing into the street. It is estimated good for from 65 to 150 barrels of oil. Opinion is that it is the best producer so far in the field, and it is also the first producer in Section 34-20n-13e, making a full three-section pool of the area.

Murray Ringold and Bapark Oil Company's Stansbery 2, NE SW SW 35-20n-13e, which had sand from 1059 to 1070 feet, was shot April 16. At that time cleaning out was going ahead with evidence strongly pointing to a good producer. When drilled in, the sand had an odor of oil and gas, and after being allowed to set overnight, filled with oil, but had to be shot before it would become an active producer. It was finally completed as a small producer, good for from 10 to 15 barrels of oil daily.

Bowen Oil & Gas Company's Micheal Strumbo 1, at the east edge of lot 12, Polston second subdivision, less than 150 feet from Stansbery 2, was completed for better than 40 barrels of oil daily on pump. Machine was moved to location for Berryman 1, NWc SE NE 3-19n-13e.

F. B. Williams' Gideon 1, in lot 1, Polston second subdivision, had the sand at 1084 feet. The first 2 feet was broken and then solid pay was had at 1098 feet, followed by 2 more feet of broken sand. Some oil showed while the well was being bailed, and an 80-quart shot was to be administered.

Fourth Dry Hole

The field had its fourth dry hole April 19, it being Baze & Baze's Stansberry 1, in block 4, Stansbery addition, the farthest east test in the field, SW 35-20n-13e. The well stopped at 1084 feet, having definitely missed the Bartlesville sand.

Lebow Jones et al's Holderman 1, in the center of lots 13 and 14, Polston second subdivision, was cleaning out after shooting the sand from 1060 to 1075 feet with 85 quarts. It is about 100 feet from the dry hole.

Aitcheson, Pearson et al's Charles D. Johnson 1, on the east edge of lot 17, Polston second subdivision, the most southwesterly well in Section 35-20n-13e, found sand from 1072 to 1095 feet and

was shot. A good fill-up was reported and the well was being tested.

Cortez Oil Company's Campbell 1, SW NE SE 2-19n-13e, had a sand from 1070 to 1083 feet, but was dry.

Want Restrictions Off

Meanwhile, the fight for lifting of restrictions to drill within the city limits was being carried ahead. Strong opposition to continuing restrictions held intact in the past is being voiced, chief among the arguments being that the city would profit from the drilling of wells on a 20-acre tract owned by the city on the Sand Springs road, near Hale station. Wheatley Brothers recently completed a gasser in the area. Possibility of action by the real estate board on the drilling question is pending as a special meeting of the body has been called by G. H. Galbreath, board president.

Mid-Continent Petroleum Corporation's Logan 1, NEc SE 31-11n-5e, west of the North Earlsboro pool, set 7-inch casing at 4780 feet, drilled to 4843 feet. A stained core was recovered from the Wilcox sand showing green oil. Other Wilcox sand oil has been black, and from 30 to 32 gravity. Logs show the well to be running nearly 500 feet higher than an old dry hole in Section 26-11n-4e, and about 200 feet lower than Stanolind & Amerada's Klabsuba 1, 5½ miles north.

Fitts Completions

In the Fitts field, Sinclair Prairie Oil Company's Wooley 22-B, SW NE SW 22-2n-7e, flowed 203 barrels of oil the first hour through tubing, and 499 barrels the second hour through casing from the Hunton lime at 3685 feet. It was acidized with 15,000 gallons and was shut in to take potential.

Skelly Oil Company's Park College 21, SE NE NW 28-2n-7e, topped the Hunton lime at 3356 feet and drilled to 3619 feet. It was acidized with 10,000 gallons and flowed 131 barrels of oil the first hour through tubing and 115 barrels the second hour. It was shut in for potential. Its Park College 20, SW NW NE 28-2n-7e, topped the Hunton lime at 3341 feet and drilled to 3612 feet where it was acidized with 10,000 gallons and shut in. Park College 19, NW SW NE 28-2n-7e, made a 24-hour potential of 4645 barrels of oil and 1,500,000 cubic feet of gas from Hunton lime topped at 3288 feet. It was drilled to 3547 feet.

Magnolia Petroleum Company's Morin 4, SE NE SE 20-2n-7e, flowed 525 barrels of oil the first hour opened, through casing, following acidization with 10,000 gallons. Hunton lime was found at 3667 feet, Sylvan shale at 3997 feet and it drilled to 3999 feet.

Amerada Petroleum Corporation's Wooley 10, SWc NE 22-2n-7e, made a potential of 2623 barrels of oil from 3836 feet in Hunton lime, following acidization with 5000 gallons. The company's Wooley 8, NE NW SW 22-2n-7e, flowed through perforated casing in the Hunton lime to produce 156 barrels of oil in 2 hours, and 342 barrels in 3 hours, the first hour through casing and the last two hours through tubing. It was acidized with 15,000 gallons and was waiting on acid reaction.

Skelly Oil Company's Ingram 4, SWc NW 23-2n-7e, flowed 424 barrels of oil the first hour through casing. After tubing was run to 3763 feet, it was acidized with 10,000 gallons and flowed 245 barrels the first hour and 233 barrels the second hour through tubing. It was shut in for potential.

Magnolia Petroleum Company's Harden 12, NWc NE 30-2n-7e, was completed for a potential of 1439 barrels of oil and 1,500,000 cubic feet of gas from the Hunton lime, topped at 3620 feet. It was drilled to 3837 feet.

Shell Petroleum Corporation's Bates 2, NWc 26-2n-7e, topped the Bromide at 4205 feet and drilled to 4326 feet. It swabbed and flowed 320 barrels of oil through tubing in 20 hours April 19 and swabbed and flowed 254 barrels of oil through tubing in 24 hours the following day.

E. H. Moore's Muse 1, SW NE SE 33-2n-7e, flowed 102 barrels of oil April 18, and flowed 1010 barrels of oil in 24 hours April 20. It flowed 98 barrels of oil on April 22 and 96 barrels on April 23.

Phillips Petroleum Company's Norris 16, SW SE SW 25-2n-6e, made a 24-hour potential of 3724 barrels of oil, production coming from Hunton lime at 3751 feet. E. H. Moore's Akers 11, SW NW NE 36-2n-6e, topped the Hunton lime at 3515 feet and drilled to 3795 feet where it made a 24-hour potential of 2654 barrels of oil and 3,901,000 cubic feet of gas.

Amerada Petroleum Corporation's Wooley 11, SE NE SE 21-2n-7e, topped the Hunton lime at 3558 feet and drilled to 3941 feet. It made a potential of 3118 barrels of oil and gauged 4,500,000 cubic feet of gas.

Jesse Completion

Continental Oil Company's Helms 1-A, NW SW SW 2-1n-7e, in the Jesse pool of Pontotoc County, swabbed 53 barrels of oil at 4676 feet, then plugged back to 4640 feet. Shot with 60 quarts between 4331 and 4372 feet, it swabbed 96 barrels of oil in 18 hours. It was cleaning out at 4385 feet.

In the Wetley pool of Pontotoc County, W. A. Delaney's McClure 1, SWc NW 22-5n-5e, topped the Hunton lime at 2305 feet and cored from 2324 to 2336 feet. Eleven feet of lime was recovered, and was bleeding oil. The well topped the Sylvan shale at 2465 feet and cored from 2469 to 2481 feet. It recovered 12 feet of shale. The well drilled to 2481 feet and was coring ahead.

Sinclair Prairie Oil Company's Rossanna 1, NWc SW 28-10n-8e, which extended the Cromwell pool of Seminole County to the south 2 weeks ago, drilled to 4189 feet and shot with 7 quarts between 4179 and 4189 feet. It swabbed and flowed 131 barrels of oil in 24 hours but is expected to do much better.

Wood Oil Company's Mayhue 1, NEc 14-9n-6e, in the Seminole City pool, topped the Hunton lime at 3980 feet and drilled to 4000 feet where it was swabbing 5 barrels of oil and water an hour. Acidized with 5000 gallons, the well flowed an estimated 1000 barrels of oil during the first 20 hours, then went dead. It was later reacidized with 3000 gallons and was running tubing to test.

Mid-Continent Petroleum Corporation's Elizabeth 2, NW NE SW 20-7n-8e, in the West Holdenville area, drilled from 2875 to 2924 feet in the Booch sand and swabbed 25 barrels of oil in 5 hours. Shot with four quarts between 2904 and 2924 feet, it was cleaning out with 800 feet of fluid in the hole.

Stanolind Oil & Gas Company's Cully 1-B, SE NW SW 12-5n-7e, in the Allen pool, was drilling below 4205 feet in the Wilcox sand. It made 16 barrels of oil in 5 hours from the Dolomite.

Anderson-Prichard Oil Company's Colon 1, NW SE SW 28-17n-4e, south of Cushing in Lincoln County, drilled to 4383 feet in the first Wilcox sand and was acidized with 2000 gallons. It was later reported flowing 2½ barrels of oil an hour, and making around 2,500,000 cubic feet of gas.

Amerada Petroleum Corporation's Holik 1, CSE NW 10-12n-5e, south of Wilzetta in Lincoln County, pumped 189 barrels of oil and 126 barrels of water in 21 hours.

Increase in South

Ardmore.—Southern Oklahoma came through with increasing activity last week as the North Tussy pool was extended to the north, and several new locations were reported for the area.

The extension is Cox & Hamon's Dixon 1, NE SE NW 32-1n-3w, on the Garvin County side of the pool, completed for 100 barrels of oil. Sand was found from 1890 to 2460 feet, and after the hole had been bailed down and allowed to stand overnight, filled 1500 feet with oil.

Gulf Oil Corporation's Berry 1, NEc NW 5-1s-3w, on the Carter County side of the pool, was completed as a producer, swabbing 110 barrels of oil, and extending the pool southwest, being an outpost location in that direction from the producing portion of the field.

At the northwest edge of the field, Carter Oil Company's Parton 1, NW SE NW 33-1n-3w, set 8-inch casing at 2179 feet, with a total depth of 2610 feet. A producer would extend the field nearly ½ mile. It is located near Wrightsmith Oil Company's Yates 3, SE NW SW 33-1n-3w, which blew in as a gasser and is yet to be completed.

Carter Oil Company et al's Harley Community 1, C NE NE 24-2s-4w, is reported running considerably higher than the discovery well of the Fox pool. Top of the Hunton lime was found about 400 feet higher than the Carter County well. It passed up a show of oil in the Hunton 10 days ago after a drill-stem test failed to show production at 4570 feet. It was drilling below 4600 feet.

OKLAHOMA

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
BECKHAM COUNTY—		
Livingston et al, 1, sw sw nw 19-9n-22w	lcn.	abd.
CARTER COUNTY—		
Carl Carter, Harley 4, nw sw nw 19-2s-3w	10	428
Wolverine Oil, Dillard 89, sw sw ne 22-4s-2w (otd 2128)	16	2493
Sinclair Prairie, Mullins 18, csl se ne 4-4s-3w	22	1050
Kewanee O&G, Ferguson 5, nw se nw 6-4s-3w (pb 1120)	35	1195
Lyle Wham Dev., Alez 1, ne sw sw 26-5s-1e	*	881
Texas Co., James Watson 14, cnw se 10-4s-3w	*	1677
CREEK COUNTY—		
Huey, Washington 2, se ne ne 27-15n-8e	*	2463
Mid-Continent, Barnett 18, se se ne 22-17n-7e	¶1	2144
Ohio Osage, Massey 1-A, nw ne ne 13-17n-10e (pb 340)	*	741

[*Continued on next page*]

Company, Well and Location	Init. Prod. Bbls.	Depth
Curtis Oil, Larrimore 2, nw se nw 10-19n-9e	*	2402
GARVIN COUNTY—		
Carter, Wright 1, ne ne se 32-1n-3w	90	2672
HUGHES COUNTY—		
Southwest Gas Utilities, Foster 2, nw se se 11-7n-8e	¶5	1838
Winona Oil et al, Harjo 1, sw se nw 20-7n-8e	166	2932
Rodgers & Rodgers, Bunner 1, ne nw ne 14-9n-8	*	1905
KIOWA COUNTY—		
Debolt, Burnett 1, nw se ne 30-7n-20w	*	978
LINCOLN COUNTY—		
Stanolind et al, Clark 1, sw sw ne 35-15n-2e	552	5152
LOGAN COUNTY—		
Helmerich & Payne et al, Ruck 1, cne se 9-19n-2w	*	5442
OKFUSKEE COUNTY—		
J. F. Smith, Ott 1, sw sw sw 8-10n-9e	35	1888
Arkansas Royalty, Fisher 9, sw ne se 18-10n-9e	75	1905
Sinclair Prairie, Shultz 4, nw ne nw 18-10n-9e	30	1873
Oklahoma Oil Corp., Ott 3, ne nw nw 19-10n-9e	35	1904
Sinclair Prairie, Fisher 6, sw nw sw 19-10n-9e	90	1869
Holt et al, R. Sands 1, nw nw ne 28-10n-11e	40	2680
OKLAHOMA COUNTY—		
Amerada, Suneram 5, nw se ne 6-13n-3w	¶1 & 654	6675
Continental, Young 16, nw sw nw 31-14n-3w	¶8 & 5789	6675
OKMULGEE COUNTY—		
Williams et al, Thompson 4, sw se se 29-15n-11e	*	2998
Reliance Oil, Anthis 6, ne nw nw 26-16n-11e (otd 2921)	3	2931
OSAGE COUNTY—		
Lewis Prod., 10, ne nw ne 28-24n-7e (otd 2741)	110	2764
Lewis Prod, 14, se ne ne 28-24n-7e	312	2710
PAWNEE COUNTY—		
Mittendorf, Wittich 7, ne se ne 32-20n-5e	lcn.	abd.
PONTOTOC COUNTY—		
Amerada, Wooley 9, nw se se 21-2n-7e	¶3½ & 3982	3876
Wooley 7, nw nw sw 22-2n-7e (pb 4060)	¶3¼ & 3524	4429
Sinclair Prairie, Wooley "B" 21, nw se sw 22-2n-7e	¶2½ & 2158	3682
Blackstock, Moody 6-A, sw nw sw 23-2n-7e	¶2½ & 3638	4016
Moore, Deaner 2, sw sw se 23-2n-7e	¶2¾ & 3103	3800
Skelly, Ingram 3, se sw nw 23-2n-7e	¶1¾ & 5089	3880
Amerada, Smith 6, cs½ se nw 28-2n-7e	¶3¼ & 3203	3500
Bishop Oil, Simpson 4-A, se nw nw 28-2n-7e	¶3 & 3253	3720
Moore, Harper 2-A, se sw ne 29-2n-7e	¶10 & 534	2602
Woodson Oil, Ivey 1, ne sw sw 21-5n-5e	*	2718
Mary "F" Oil, Miller 3, cn½ ne se 16-5n-8e	90	929
POTTAWATOMIE COUNTY—		
Champlin Ref., Buckles 1, se ne ne 7-6n-4e	*	4771
Reynolds Drlg., Shewbert 1, se sw ne 29-7n-4e (pb 3900)	*	4360
SEMINOLE COUNTY—		
Sinclair Prairie, Patten 3, ne sw ne 18-6n-8e	25	2813
Magnolia, Cruce 2, sw se se 2-7n-6e (otd 4151) (pb 4213)	25	4227
Sinclair Prairie, Hyde 7, nw sw nw 2-8n-5e	10	4153
Sinclair Prairie, Jones 2, ne se se 9-8n-6e (pb 3328)	*	4080
Fleetborn, Dixon 1, ne nw se 28-8n-8e	*	4336
Campbell, Droppleman 2, ne sw ne 17-9n-7e (otd 3381) (pb 3382)	¶½ & 60	3431
Hudson, Tiger 1, se se sw 32-10n-7e	*	4632
Amerada et al, W. Davis 1, ne ne ne 35-10n-7e	*	3674
Texas Co., Mayhue 8, se nw nw 14-9n-6e	75	4168
STEPHENS COUNTY—		
Mudge Oil, Wood 45, cnw nw 26-1s-5w	*	1130
Armor O&G, Montgomery 2, nw nw se 11-2s-8w	*	1504
Raizen Bros., Price 13, cwl se sw 10-3s-5w	7	1440
TULSA COUNTY—		
Anthony, Wilcox 3, ne ne nw 3-16n-12e (otd 985)	¶1½ & 700	2288
Johnson O. R., Grimes 2, ce½ ne sw 31-19n-10e	200	2284

*Failures; †Junked; ¶Million cu. ft. gas.

KANSAS FIELDS

Link possible between Trapp and Richman fields.

* * *

Marshal extension attempt preparing to drill in.

* * *

Weathered pool Siliceous test yields 2802 barrels.

Wichita. — Drilling was unusually quiet in Kansas last week. Most interesting was the southwest extension of the Trapp pool, Russell County. Second in line was the probable south extension of the Marshall Ranch pool, Ellis County. A disappointing test was reported from near the Raymond pool, Rice County.

Skelly Oil Company's Niedens 4, NWc SE 32-15s-13w, pushed production one location southwest in the Trapp pool, also showing for a possible link well between the pool and Richman pool, about 1½ miles east. After drilling from 3323 to 3335 feet, in Siliceous lime, Niedens 4 rigged up standard tools and was acidized with 5000 gallons, following which it pumped 1231 barrels of oil during the first 12 hours of the potential test. At last reports, the well was pumping 103 barrels of oil per hour. Field men estimate the well will be completed for around 2500 barrels of oil.

West offset to the new producer, Gulf Oil Corporation's Michaelis 2, NEc SW 32-15s-13w, pumped 1511 barrels of oil on a 24-hour potential test after drilling from 3294 to 3305 feet in the Siliceous lime. It was acidized with 6000 gallons.

Marshall Ranch Extension

Another well which may be an extension is Joe Aylward et al's Meis 1, NWc 6-12s-17w, ½-mile south of production in the Marshall Ranch pool. The well based on the Oswald lime at 3630 feet and drilled ahead, seeking top of the Siliceous lime which it found at 3683 feet. The well had previously found 100 feet of oil in the hole from 3609 feet, naer the base of the Oswald. After finding the Siliceous lime, a 5-inch liner was run to bottom preparatory to drilling in.

Tom Johnson et al's Schubert 1, SWc 9-20s-10w, north of production in the Raymond pool, Rice County, topped Siliceous lime at 3417 feet and picked up some high-gravity oil at 3380 feet in the Simpson sand. A hole full of water was later found from 3426 to 3429 feet in the Siliceous lime. The oil found in the Simpson was not in commercial quantities, and the well probably will be abandoned.

A wildcat is being started by W. E. Witt and J. H. Mayhew at A. F. Mead 1, SEc NW 33-25s-16w, 5 miles east of the old McCarty pool and 1 mile north of Trousdale in Stafford County.

Atlantic Refining Company and Phillips Petroleum Company's McNaughton 1, NW NE NE 27-24s-13w, ¾-mile southwest of production in the St. John pool, topped the Siliceous lime at 4100 feet and recovered a core saturated with oil. The hole was bottomed at 4110 feet where casing was being run and standard tools rigged up. It was bailing down.

Otis Well Flows by Heads

Carter Oil Company's Rubart 1, SEc 24-18s-16w, in the Otis pool, Rush County, was flowing by heads from the Lamont sand at 3533 feet after casing was perforated and the hole shot with 50 quarts. It was being cleaned out and preparing for a production test. It showed for 6,000,000 cubic feet of gas and 40 barrels of oil following the shot. The same company's Woodward 1, SEc 23-18s-16w, was completed for 20,000,000 cubic feet of gas and no oil from the Reagan sand at 3550 feet.

C. L. Price et al's Kraft 1, SW NW NE 10-17s-11w, Barton County, completed under-reaming casing and cleaning out at 3226 feet in the Lansing lime, where a good show of oil was found. Operators were preparing to acidize. The hole filled 1800 feet with oil. It was waiting on cement to set before drilling plug and running acid.

C. L. Carlock et al's Ehly 1, NEc SE 5-18s-11w, southwest of Caflin, topped Siliceous lime at 3350 feet and was coring below 3376 feet. Several streaks of porosity had been found, indicating the presence of oil. Top of the Siliceous lime was found at 3350 feet, and between 3359 and 3378 feet, a 17-foot core was taken. Only 3 feet of the core was recovered. It was bottomed at 3390 feet.

Earl Wakefield's Putnam Mortgage Company 1, SEc NW 32-15s-17w, west of Pfeiffer in Ellis County, topped Oswald lime at 3199 feet. Base of the Topeka lime was at 3144 feet and top of the Dodge lime at 3166 feet. Six-inch casing was being run to 3345 feet

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to shut off caving hole. It will be drilled to the Siliceous lime.

Lario Oil & Gas Company's Marshall Ranch 2, offset to the discovery well drilled by that company in the Marshall Ranch pool, was completed for 1072 barrels of oil natural from lime at 3651 feet. Bridgeport Machine Company's Kraus 1, NEc SE 21-14s-19w, an east offset to the discovery well in the Kraus pool, was completed for 271 barrels of oil from the basal sand at 3765 feet.

Empire Oil & Refining Company's Kimel 1, NWc 4-29s-2w, southwest of Wichita in Sedgwick County, topped Wilcox sand at 4092 feet. Viola lime was not found, but a small show of oil was had in the Wilcox. It was coring below 4102 feet with no increase in the oil. The same company's Atherton 1, NWc SE 25-13s-15w, 3½ miles west of Russell in Russell County, was testing after getting three bailers of water from the Siliceous lime at 3342 feet. Top of the lime was found at 3320 feet. Bailing was continued after a hole full of water was found between 3355 and 3357 feet.

Weathered Pool Potential Up

Lloyd, Frost and Study et al's Williamson 1, NEc SW 33-31s-3e, in the Weathered pool, near Winfield in Cowley County, flowed 2802 barrels of oil a day from Siliceous lime at 3270 feet. The output of the well tends to increase the potential of the field to about 22,800 barrels of oil daily.

Krueger Oil & Refining Company's Rathburn 1, SEc NW SW 14-9s-16w, ¾-mile south of production in the Laton pool, Rooks County, had an increase in production after being acidized in the Oswald lime at 3415 feet. It was completed for 25 barrels of oil daily late in 1934, but was recently reconditioned and pipe cemented at the bottom of the hole.

Skelly Oil Company's Interurban 3, CSW 30-27s-10w, northwest of Cunningham in Kingman County, was being plugged back from 4153 feet in Simpson to Viola lime at 4027 feet. The well tested 51,900,000 cubic feet of gas in the Viola lime, and had an estimated 16,000,000 cubic feet of gas in the Simpson sand.

Ryan Consolidated Oil Corporation's Couch 1, SWc SE 13-30s-5e, south of the Fox-Bush pool of Butler County, had a good showing of oil in the Bartlesville sand between 2837 and 2842 feet, and bailed considerable free oil.

Carter Oil Company's Seibert 1, CSW NW 4-34s-8w, southwest of Anthony in Harper County, was drilling below 4660 feet in Mississippi lime with some gas showing. Drilling was continued below 4700 feet after another show of oil came up through the rotary drilling mud.

Wichita.—Kansas had 80 first reports last, twice the number for the previous week. A total of 70 wells were completed, an increase of 22. Of these, 50 were oil wells producing 62,806 barrels of oil, and 1 gas well made 500,000 cubic feet. There were 17 dry holes and 2 abandoned locations. Rice County led in locations with 14; Russell was second with 13, and Ellis County was third with 9. McPherson County had 7; Chautauqua had 6, and Reno County 5. Barton and Stafford each had 4 and there were 3 in Cowley County. Barber, Scott, Sumner and Woodson Counties each had 2, and there was 1 each for Edwards, Ellsworth, Marion, Rush, Sedgwick and Trego Counties.

KANSAS OFFICE

Wichita.—The Tide Water Associated Oil Company will open a Kansas office May 1 for the company at Wichita. Arrangements were being completed last week by R. V. Stratton, superintendent of the land department, and G. C. Siverson, chief geologist of the Oklahoma-Kansas division, both of Tulsa. Heads for the new branch had not been announced, but it is understood Leland Davidson and Don Wines will be transferred from Tulsa to serve on the geological staff.

A & K CHANGES NAME

Oklahoma City.—The A & K Petroleum Company of this city has changed its name to Kerlyn Oil Company, according to an announcement by Robert S. Kerr, president, following a special meeting of the stockholders April 12. No changes were made in officers and directors of the concern, which has been operating in Oklahoma and Texas since 1932, with headquarters at Oklahoma City.

KANSAS
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
BARBER COUNTY—		
Barbara Oil, Holmes 1, ce½ se 15-33s-13w	¶10 & 441	4847
BARTON COUNTY—		
Texas Co., F. Blomer 7, nw ne ne 36-17s-11w	940	3303
Republic, McLean 5, se ne se 25-17s-11w	1349	3311
Spencer & Yarnell, Patzner 2, ne nw se 36-17s-11w	3000	3257
C. B. Davis et al, Wm. Steckel 7, se ne se 1-20s-11w	1229	3268
Stanolind, W. M. Panning 1, sw sw se 2-20s-11w	lcn.	abd.
I. T. I. O., Schrepel 1, se se ne 26-20s-11w	1451	3325
BUTLER COUNTY—		
Molk Pet., Loomis 11, sw sw nw 15-27s-4e	60	2477
Landon et al, McCaig 1, ne ne se 13-28s-6e	90	2737
CHAUTAUQUA COUNTY—		
Sagamore Oil, White 4, cse nw 15-32s-12e (otd 740)	¶½	1278
Sinclair Prairie, Casement 35, sw sw se 32-33s-11e	¶3½ & 85	1774
COFFEY COUNTY—		
Saco Oil, Scott 4, sw se nw 13-23s-14e	30	1624
COWLEY COUNTY—		
Gulf, Cairns 1, nw nw sw 21-32s-5e	264	3082
Sinclair Prairie, Collinson 1, se nw se 5-34s-3e	358	3316
ELLIS COUNTY—		
Margay Oil, Bemis "C" 1, nw ne sw 22-11s-17w	2347	3459
Deep Rock, Baumer 1, nw nw nw 27-11s-17w	2620	3451
Champlin Ref. Meir "A" 1, se se nw 36-11s-18w (pb 3582)	*	3601
Sunray Oil, Befort 1, ne ne ne 11-14s-20w	*	3914
FINNEY COUNTY—		
Keith & Olson Drlg., Ely 1, nw nw sw 34-22s-29w	*	5556
GREENWOOD COUNTY—		
Shaffer & Howell, Schneider 17, nw se ne 15-23s-13e	15	1772
Landon, Webber 1, sw nw sw 10-25s-13e	*	1630
Shippey, Boone 1, ne ne nw 21-26s-12e	*	1875
Coronado Oil, Hansen 1, ne ne se 12-27s-10e	*	1932
HARVEY COUNTY—		
Harburney Oil, Schrag 1, nw nw se 24-22s-3w	*	3711
MARION COUNTY—		
National Ref., Reamy 20, se sw se 17-21s-4e	144	2409
PRATT COUNTY—		
Elwell, Fay 1, nw nw se 15-27s-14w	*	4355
RENO COUNTY—		
Atlantic O&R, Page 1, se nw nw 19-23s-7w	*	4084
Ohio Oil, Priddle 5, cn½ s½ se 17-24s-4w	200	3377
Sinclair Prairie, Seedle 7, nw se ne 17-24s-4w	144	3373
Barnsdall Oil, Westfall "A" 2, cw½ w½ se 19-24s-4w	954	3386
Westfall "A" 3, ne se se 19-24s-4w	1286	3386
National Pet., Tucker 1, se se ne 19-24s-4w	1255	3385
RICE COUNTY—		
Transwestern Oil et al, Moran 5, ce½ w½ nw 4-18s-10w	428	3272
Gulf, Lena Knop 6, nw ne nw 33-19s-10w	1259	3304
Bradley Oil et al, Ginter Heirs 1, nw nw nw 13-20s-8w	lcn.	abd.
Hanna et al, Brothers 1, se nw nw 25-20s-8w	*	3691
Armor et al, McFarland 1, ne nw nw 7-20s-9w	511	3286
Skelly et al, Linville 1, sw nw ne 2-20s-10w	*	3327
Mid-Continent, Wood 5, ne nw ne 4-20s-10w	2581	3323
Gulf, Stolz Jr. 15, ne se nw 5-20s-10w	1116	3322
Stolz Jr. 16, se se nw 5-20s-10w	923	3325
Tatlock, Drew 5, nw ne sw 5-20s-10w	1200	3326
Berscheidt "B" 6, se nw sw 6-20s-10w	250	3320
Atlantic Oil, Gossman "B" 1, nw ne nw 8-21s-7w	4942	3339
Derby Oil, Thode 8, se se se 8-21s-7w	8732	3371
Gulf, M. Gossman 1, sw nw se 8-21s-7w	39	3377
L. E. Douglass, Theede 4, sw sw sw 9-21s-7w	2190	3372
Aylward Prod., Johnson 3, se ne ne 17-21s-7w	1015	3393
RUSSELL COUNTY—		
Skelly, Boxberger 3, sw nw ne 33-13s-14w	1236	3294
Gulf, Ehrlich 3, nw sw nw 1-14s-15w (otd 3095)	830	3311
Central Pet., Foster "B" 3, sw se ne 3-14s-15w (otd 3079)	2438	3304
Darby Pet., Dumler "D" 1, nw sw nw 36-14s-15w	*	3191
Carter et al, Josephine 1, se se se 7-15s-13w	273	2894
Carter, Detrick 2, se sw sw 8-15s-13w	257	2595
W. I. Southern, Inc., Sellens Heirs "A" 7, sw ne sw 30-15s-13w	2632	3272
Michaelis 5, ne nw ne 31-15s-13w	2640	3277
Coralena Oil, Boomhower 8, ne ne nw 32-15s-13w	2546	3333
W. I. Southern Inc., Neidens 3, nw nw ne 32-15s-13w	667	3330
Barnsdall, Krug 2, se sw ne 34-15s-13w	744	3315
STAFFORD COUNTY—		
Stanolind et al, Heyen "A" 3, ne ne nw 31-22s-11w	1724	3556
SUMNER COUNTY—		
Stelbar Oil, Gift 1, sw sw ne 28-31s-1w	*	4133
Transwestern Oil, Murphy 5, se sw se 32-31s-1w	568	3715
Murphy 8, nw ne se 32-31s-1w	622	3697
Shawver, Erker 1, nw sw nw 33-31s-1w	1131	3676
Stelbar, Rothrock 3, ne ne nw 4-32s-1w	1040	3699
Olson Drlg. et al, Barr 1, se se se 8-34s-2w	*	4750
WOODSON COUNTY—		
C. E. Roth, Schick 1, csw ne 20-23s-14e	10	1645
Elbar, Figge 5-B, sw ne sw 27-23s-14e	*	1750
Gillespie & Sons, Hogueland 1, se sw ne 3-24s-15e	*	1853
Lilley et al, Hoffster 1, nw ne se 3-24s-15e	*	1523

*Failures; †Junked; ¶Million cu. ft. gas.

NORTH AND WEST TEXAS

South extension of Judkins widened 1½ miles east.

* * *

Attempt to extend Waddell northwest is failure.

* * *

Half mile added to Sand Hills Permian production.

Midland.—Production in the south extension of Judkins field, Crane County, was widened about 1½ miles to the east through Sinclair Prairie Oil Company's University 1-24, NE NE SW Section 13, Block 35, which swabbed and flowed 72 barrels initial from dolomite at 3512-24 feet and 3533-3538 feet. The hole is bottomed at 3566 feet, and has not been shot or acidized. Top of lime was logged at 3070 feet, or 273 feet below sea level.

It is east of Clark, Cooper & Smith's A. P. Jordan 1, which made a small pumper last March after a nitro shot and dual acid treatment in lime at 3558-3750 feet, with an elevation of 2810 feet. The latter extended the original Ector County oil field across the county line and about 3½ miles south, and the new producer is about the same distance southeast of nearest production in the field. All intermediate acreage is owned by the University of Texas.

Well Fails in Sulphur Water

Sinclair Prairie Oil Company's University 1-27, SE SE NW Section 12, about one mile east by north of the well in process of completion, was recently abandoned as a failure in sulphur water at 3605-23 feet, with an elevation of 2797 feet.

Gulf Oil Corporation's University 1-B, near SW SW SE Section 11, Block 35, which was trying for a northwest extension for Waddell field, Crane County, failed to produce after acid treatment and a nitro shot and was abandoned when deepened to sulphur water at 3655 feet, with an elevation of 2784 feet. The above two dry holes eliminated all prospects of the prolific portion of Waddell field being eventually linked with the Judkins area.

Gulf Oil Corporation's W. N. Waddell 17, an inside location for the Waddell field, flowed 108 barrels naturally the first hour and increased to 135 barrels the second hour when deepened to 3517 feet. It is due to make a big well when given the customary acid treatment, as the comparatively thin lime pay in this area responds favorably to acid.

Still Watching Waddell 4

Completion gauge through tubing has not been made by Gulf Oil Corporation's W. N. Waddell et al 4, third Ordovician lime completion for the Sand Hills field, Crane County. An unsuccessful attempt was made by the rotary crew to run 2½-inch tubing without killing the oil and gas flow. Pressure control equipment was engaged late last week to snub in the tubing. This well created considerable attention when it gauged 283 barrels of 45 gravity oil in three hours through casing from Ellenberger limestone at 6004-14 feet after showing gas and free oil from Simpson sand series topped at 5824 feet, or 3265 feet sub-sea. It is the first commercial oil producer in the Permian Basin outside the Big Lake field from the Ellenberger, although the company's two previous deep wells are making oil from the Simpson.

American Liberty Oil Company et al's J. B. Tubb-Humble 4, NEc Section 19, Block B-27, extended Permian lime production in the Sand Hills area about one-half mile southwest with an initial of 2177 barrels after using 6000 gallons of acid in lime at 4306-4427 feet. Rig has been skidded 890 feet south to drill Tubb 5. The new producer will require north and east offsets by Gulf Oil Corporation et al.

New Hockley County Discovery

Initial potential of 333 barrels of pipe line oil, with gas/oil ratio of 1360/1, was established by The Texas Company et al's Bob Slaughter 1, southwestern Hockley County discovery, after using 2000 gallons of acid in lime at 4980-5023 feet. This gauge was taken with a swab lost in the tubing. The swab was recovered April 21 by pulling tubing, and the well made a single head of 114 barrels in 1-1/3 hours. It is slated to be treated again with acid, although the well will flow in excess of its proration allowable.

A second wildcat test for the same geophysical prospect near the north line of Gaines County has been authorized by Amon G. Carter, Fort Worth, et al, on the A. L. Wasson tract. Carter and Continental Oil Company's Wasson 1, SW SW NW Section 48, Block A-X, PSL Survey, has had difficulty in landing seven-inch pipe on bottom at 3092 feet because of air pockets and gas production above this level. Location for Wasson 1-B, SE SE NW Section 44, is about three miles northeast of the above test. Continental Oil Company gave Carter 50 percent interest in six sections supporting Wasson 1 for the drilling of a free test, and an option on six sections adjoining to the east on the same basis. Carter sold lease spreads to Humble Oil & Refining Company and Phillips Petroleum Company at $50 per acre cash before Wasson 1 encountered gas in the Yates sand, with an elevation of 3549 feet.

Permian Play Spreading

Exploratory work in the north portion of the Permian Basin promises to invade southwestern Bailey County. McCelvey Bros., Temple, Texas, and associates, are reported to have contracted for the drilling of a 5500-foot test on a lease block held in Leagues 161 and 162, Presidio County School Lands. A new rotary rig has been assembled by the contractor to proceed shortly with the drilling of Ernest L. Wilson, Thornton Lomax, W. L. Pickens and R. F. Duggan's previously announced location on the Yellow House Ranch in the southeast corner of the county.

In Yoakum County, Magnolia Petroleum Company's M. E. Taylor 1, NEc Section 201, Block D, has resumed drilling after making rig repairs at 2318 feet, with an elevation of 3607 feet. E. R. Bahan, R. R. Rhodes and Jean Fitz-Patrick's Shook 1, C NE Section 420, Block D, has cemented 10-inch pipe at 2360 feet, with an elevation of 3761 feet, and will switch to cable tools.

Empire May Drill Wildcat

Another wildcat project for northwestern Andrews County may materialize as Empire Oil & Refining Company is endeavoring to promote a test on the J. D. Biles tract, SW Section 12, Block A-31, PSL Survey, owing to lease expiration due on May 27.

Atlantic Refining Company's B. H. Blakeney 1-C, NE NE SE Section 22, south offset to a small oil producer on the extreme west edge of the North Cowden field, Ector County, is showing for a gasser after a 410-quart nitro shot at 4120-4250 feet, followed by acid treatment. The well tested 4,000,000 feet of gas with a small spray of oil.

Panhandle Oil and Gas Properties at Peak Value

Pampa, Texas.—Property values in the Texas Panhandle oil and gas areas are currently at the highest level attained in more than a decade. Tracts capable of producing sweet or sour gas or in big demand at cash bonuses that now surpass prices ever paid in the district. Competition for gas reserves has been augmented by the construction of additional natural gasoline and carbon black plants, and through bidding by natural gas pipe line units.

Partially developed oil properties outside the stripper-well areas are being diligently sought by Phillips Petroleum Company, Shell Petroleum Corporation and others. The former is attempting to bolster its crude reserves in protecting its large refinery at Borger and

gasoline pipe line investment to the Middlewest.

Highest price paid for undeveloped oil acreage since the passing of the first oil boom in the district was recently recorded when Phillips Petroleum Company acquired lease on the J. A. Whittenburg 320-acre tract, embracing the W½ Section 26, Block M-23, T. C. Ry. Survey, Hutchinson County. This deal involved a cash bonus of $100 per acre, and $800 per acre, payable from one-fourth of the production, with the purchaser obligated to complete 4 wells within 12 months. Phillips Petroleum Company recently purchased Stansylvania Oil & Gas Company's C. B. Lasater 320-acre lease, Section 27, Block M-23, T. C. Ry. Survey, and a partially completed test for $160,000 cash, and buver to assume an oil payment of $125 per acre. Since taking charge of the test, Phillips Petroleum Company shot 320 quarts of nitro in dolomite at 3163-3241 feet, and the well swabbed 177 barrels oil in six hours. It is bottomed at 3261 feet, or 44 feet below sea level.

[*Continued on page 96*]

WEST TEXAS

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
ANDREWS COUNTY (Wildcat)—		
Sinclair Prairie, Emma Cowden 1	5	4342
CRANE COUNTY (McCamey Field)—		
Chester Hunter-H. & P. Oil Co., E. S. Hughes 1	584	2118
B. C. Mann, Simpson & White, W. F. Durham 5	50	2520
W. E. Production Co., E. S. Hughes 1	12	2500
CRANE COUNTY (Sand Hills Field)—		
American Liberty Oil Co. et al, J. B. Tubb-Humble 4	2177	4427
CRANE COUNTY (Waddell Field)—		
Gulf Oil Corp., University 1-B	*	3655
ECTOR COUNTY (Judkins Field)—		
Gulf, W. E. Connell 11-B	257	3700
Skelly Oil Co. et al, John Scharbauer 6	362	3622
ECTOR COUNTY (North Cowden Field)—		
Stanolind, J. M. Cowden 40	449	4227
ECTOR COUNTY (Goldsmith Field)—		
Atlantic Ref. Co., H. E. Cummins 1-D	210	4245
Empire O&R Co., H. E. Cummins 2-C	628	4250
H. E. Cummins 1-D	121	4250
Landreth Oil Corp., C. Scharbauer 2-B	921	4221
C. Scharbauer 2-D	1396	4225
FISHER COUNTY—		
Gen'l Crude Oil Co., Wm. Flannigan 11	70	3114
GLASSCOCK COUNTY—		
Conoco-Group 1 Oil Corp., Settles 29-S	424	1282
Fleetborn Oil Corp. et al, Black Arrow 1	*	3002
HOWARD COUNTY—		
Magnolia, G. O. Chalk 9	180	2975
Owen M. Murray et al, J. P. Davis 6-A	510	2862
Sinclair Prairie, G. M. Dodge 49	510	2770
JONES COUNTY—		
Danciger Oil & Refineries, Inc., Guitar 3	1250	2004
R. B. Farris et al, Beasley 1	*	2080
S. C. Herring et al, E. Haynes 1	*	2245
Thos. D. Humphrey, H. Dorsey 17	285	2222
Lueders Dev. Co., S. L. Underwood 1	*	1802
T. K. Simmons et al, E. A. Hicks 1	*	2226
E. A. Ungren-A. J. Frazier, H. Dorsey 13-C	626	2222
H. Dorsey 4-D	783	2221
J. J. Steele 1	*	2487
PECOS COUNTY (Pecos Valley Field)—		
D. J. Finley et al, Iowa Realty Trust-Sinclair 1-A	65	1634
UPTON COUNTY (McCamey Field)—		
Amerada Pet. Corp., Lee R. Lane 5	370	2186
Brown-Hancock Oil Co., M. L. Baker-Pure 1-A	835	2360
J. W. Ellis et al, J. W. Robbins 10-B	907	2175
Magnolia, E. S. Hughes 6	100	2305
J. W. Perry et al, E. Shirk 4	232	2323
Shell, Della Bowen 36	521	2158
Stanolind, A. S. Burleson 44	75	2107
WARD COUNTY—		
Gulf Oil Corp., E .W. Estes 18	1811	2660
Hutchings 72	701	2750
Hutchings 73	1744	2753
Hutchings 75	1375	2755
G. W. O'Brien 81	212	2786
Humble, University 13-F	1297	2750
C. F. Kolp et al, J. F. York 4	65	2547
Pat Moran-Atlantic Ref. Co., Reynolds 1	*	850
Hal C. Peck et al, Monroe 3	25	2330
Prince Bros. Drl. Co., Hall-Roberts 2-C	200	2532
Rio Bravo Oil Co., D. Olcott 20	298	2490
Tide Water Associated, W. D. Johnson 16	821	2628
WINKLER COUNTY (Halley Field)—		
Eastland Oil Co., S. M. Halley-Amerada 3-A	1724	2784
WINKLER COUNTY (Kermit-Sayre Field)—		
Eastland Oil Co., Roy Clapp 3-B	2583	3100
Gulf, L. Daugherty 22	552	3000
L. Daugherty 26	626	3125
Humble, N. R. Colby 9-C	402	3100
Illinois Oil Co., Central State Bank (Abilene)-Conoco 12-B	911	3135
Central State Bank (Abilene)-Conoco 13-B	1074	3122
Magnolia, N. R. Colby 9	336	3136
J. B. Walton 72	352	2922
Joe C. Maxwell, Inc., Gar-Tex O&G Co. 1-B	881	3126
Monday Oil Co.-Bert Fields, Central State Bank-Conoco 15	1187	3128
Navarro Oil Co., J. A. Drane 5	715	3130
Shell, Ida Hendrick 6-L	1142	3099
Ida Hendrick 3-M	633	3096
Skelly Oil Co., N. R. Colby 5	1251	3100
WINKLER COUNTY (Keystone Field)—		
The Falcon Co., W. A. McCutcheon 1-A	240	3550

*Failures; †Junked; ¶Million cu. ft. gas.

NORTH TEXAS

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
ARCHER COUNTY—		
Nick Anagnos et al, J. S. Bridwell 11	14	892
T. H. Brown et al, Walter Ford 1	*	1102
L. T. Burns et al, Claude Cowan 2-A, blk 6	*	1112
W. D. Pace 4, blk 163	10	1278
W. D. Pace 5, blk 163	12	1275
L. H. Tarr 1, blk 139	*	1387
Consolidated Oil Co., Portwood 17-C-D, sec 2412	60	1453
Continental, W. J. Logan 1-B	*	1365
Clint Crosby et al, M. A. Garvey 1, blk 94	*	1164
Deep Oil Dev. Co., L. F. Wilson 3, lot 2	50	2232
Jim Fish et al, D. W. Fish 5, blk 84	†	1149
Golding & Cochran, G. B. Hamilton 4-A, sec 6	25	1139
W. J. McMurtry 1, blk 11	*	766
N. D. Goldsmith et al, Earl Bearden 1-A	*	1130
E. C. Harlin, Jr., et al, Mrs. D. Burks 1, blk 10	*	802
Wilson & Logan, Mrs. E. V. Pearston 1, blk 120	*	2732
CLAY COUNTY—		
Bridwell Oil Co., Saner-Lomax 7	*	300
Metzner & Burns, Thornberry 17, blk 11	*	352
COOKE COUNTY—		
Dove Oil Co., J. A. Carr 7	150	1933
A. D. Robinson et al, J. H. Otto 4-A, blk 5	4	835
Schermerhorn Oil Corp., F. J. Hess 11	2	1302
Seitz-Comegys & Seitz, R. W. Trew 19-A	34	1213
Vindicator Oil Co., Walterscheid 12	25	794
DENTON COUNTY—		
Bolivar Drl. Co., J. P. Knox 1	*	1957
J. C. Foster et al, G. T. Jeffcoat 1	*	3035
GRAYSON COUNTY—		
Rapp Drl. Co.-Fred Gilbreath, J. R. Singletary 1	25	4219
JACK COUNTY—		
Beard & Collier, W. R. T. Ezell 2-A	520	2953
W. R. T. Ezell 1-C	330	2937
Carpenter Oil Corp., Johnson Bros. 1	*	712
Corvette Oil Corp., Clayton Bros. 3	442	3001
Danciger Oil & Refineries, Inc., Kinder-Moore 1, sec 1	*	3104
R. H. Dearing & Son, S. M. Jones 1	405	3230
J. A. Raley 1	385	3246
Deep Oil Dev. Co., J. M. Bridwell 3	110	3015
Edwards, Knowles & Crespi, Simpson Bros. 2	100	2978
Hamilton Pet. Co., F. H. Rhodes 3	720	3022
Hanlon & Buchanan, Inc., T. T. Bouldin 2, sec 3	60	3110
Thos. D. Humphrey, G. T. Smith 3	202	2985
Mar-Tex Oil Co. (was Bennett Pet. Corp.), W. J. Chambers 8	251	3020
S. M. Jones 1	290	3160
R. H. Montgomery et al, L. M. Chambers 1	50	2982
Ohio Fuel Supply Co., D. A. Nichols 1	*	3311
Owenwood Pool, S. M. Jones 2	150	3089
S. M. Jones 3	145	3050
O. J. Perren et al, J. R. Clayton 5	430	3040
States Oil Corp., D. C. Clayton 1-C	20	3073
J. W. Coley 1	8	3305
MONTAGUE COUNTY—		
Bridwell Oil Co., F. H. Begley 2-C	168	1798
Lesh & McCall, R. W. Cunningham 13-A	96	941
Perkins-Cullum Oil Co., Hoben-Salmon 1	12	935
Sinclair Prairie and Gibson-Jennings, Inc., D. T. Holt 8, blk 45	232	1719
THROCKMORTON COUNTY—		
Frazier Moss, Tr., et al, B. Daws 1, sec 698	*	642
WICHITA COUNTY—		
Bridwell Oil Co., W. B. Honaker 5	20	1035
W. B. Honaker 6	†	1026
Duke, Kent & Felty, C. Guyer 4	*	163
L. F. Ramming 1	*	263
Fresno Oil Co., L. F. Ramming 27	8	1222
L. F. Ramming 28	48	1301
King Oil Co., M. M. Stone 3-A	296	1637
E. B. Madden et al, Fee 14-A	2	451
Melat & Graham, Munger-Gulf 1-C, lot 17	541	3878
Perkins-Cullum Oil Co., S. B. Burnett 25, sec 5	20	1580
Geo. Proctor et al, Foster-Allen 7-A, sec 1	*	1136
Goetze-Dobie 1, sec 2	*	1140
Annie M. Rowe et al, Waggoner Bros. 9, blk 13	*	1923
E. J. Stump et al, Perkins-Cullum 1, blk 21	*	1828
WILBARGER COUNTY—		
King Oil Co., Waggoner Est. 7-A, sec 104	15	1550
YOUNG COUNTY—		
Sam S. Alexander et al, L. D. Clark 1, sec 209	32	853
Paul Atchley et al, J. P. Atchley 3, sec 226	*	1007
Cable Oil Co., S. E. Snider 34	4	596
Duncan-Holt & Marchman, Benson Bros. 19, sec 1391	100	908
Mrs. Jessie Kolius et al, J. D. Hall 9, sec 167	10	889
A. H. and S. P. Schmidt, T. J. Routan 11, sec 22	10	695
Milton J. Welch et al, M. S. Mahler 1	*	531
Wooten & Wilson, J. W. Bullock 1, sec 61	*	970

TEXAS PANHANDLE

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CARSON COUNTY—		
Gulf, E. Cooper 18	675	3060
Phillips, E. Cooper 8	597	3005
GRAY COUNTY—		
King Oil Co. et al, M. Jackson 5	438	3240
Magnolia, C. S. Barrett 6	135	3290
Ohio, Oil, L. H. Webb 6	165	2485
Shell, E. E. Gethings 2-A	526	2766
T. B. Haggard 5	582	3260
Warner Oil Co., A. Chapman 4, sec 69	989	2730
HUTCHINSON COUNTY—		
Benonine Oil Co., W. F. Starnes 4	1429	3193
J. E. Crosbie, Inc., J. W. Pitts 16	604	3058
Gulf, H. C. Pitcher 10	214	3198
Texilvania Oil Co., Harvey 3	585	3073
MOORE COUNTY—		
Dave Rubin & Phillips Pet. Co., P. O. Beard 4	¶46	3150
Shamrock O&G Co., J. T. Sneed 2, sec 30	¶44.4	2850
Terry Thompson 2	¶29	3335
DEAF SMITH COUNTY—		
Uscan Oil Co., (was Western Union Oil Co.), F. Farwell 1	*	4518

*Failures; †Junked; ¶Million cu. ft. gas.

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EAST TEXAS

Woodbine basin has high pressure field in prospect.

* * *

Horizon of Opelika strike has not been identified.

* * *

Lower Glen Rose at Long Lake producing gas.

Tyler.—The East Texas Woodbine basin has a high-pressure oil well in process of completion from the lower section of the Trinity series on the Opelika structure, northeastern Henderson County, and this same horizon yielded gas when formation tester was used on the first deep project for the Long Lake field, Anderson County. The Opelika oil strike was made by Tide Water Associated Oil Company, Seaboard Oil Corporation and Humble Oil & Refining Company's McElreath-Suggett 1, near center of 149-acre lease, W. P. Wyche Survey, 1½ miles northwest of the town, unexpectedly by the night tour April 16 in lime at 7195 feet, or 6803 feet below sea level. Drill pipe stuck when pulled about 30 feet off bottom, and the well threatened repeatedly to blow out while the contractor's crew built up the weight of the drilling fluid to 15 pounds per gallon. In establishing circulation early last week the well was permitted to flow oil and drilling fluid from a line on the casing, and the oil was classed as about 33 gravity, with a brown color, with comparatively little gas. Danger of a blowout was not removed until April 21 when the oil horizon was rendered dormant, but the problem of removing the drill pipe to run casing for a production test remains to be solved.

The frozen drill pipe failed to respond to a steady pull for 7 hours with 9 lines, according to reports on April 22. Owners do not care to risk a parted drill stem, since the hole is open below 1772 feet, where 13⅜-inch pipe was cemented. An attempt will be made to mill off the bit, else the drill pipe will be cemented in the hole and used as an alternative for casing. It has been common practice heretofore among operators engaged in drilling lower Trinity projects to cement an intermediate string of pipe on top of the Georgetown lime, but an exception was made by the three majors sponsoring the Opelika test. Harry W. Bass, Dallas, drilled the Opelika well on contract.

Horizon Not Identified

Comparatively small volume of gas is present, as hourly checks on the weight of the circulating fluid failed to show any appreciable thinning. If a big volume of gas was responsible for the well registering 1350 pounds pressure on the casing before being killed, the mud would have thinned from contamination with the free gas.

Behavior of the Opelika prospect is generally accepted as being ample proof that a commercial oil producer is in process of completion, but the identity of the producing horizon, consisting of soft porous lime topped at 7185 feet, according to drilling log, has not been established as lower Glen Rose. First stringer of anhydrite has been definitely place at 6930 feet, and continued for more than 130 feet. The massive anhydrite section, normally found immediately above the lower Glen Rose, has not been reached by the Opelika test. However, geologists concede that a fault condition could have cut out a portion of the anhydrite formation, also production is coming from a lime break between the two anhydrite zones. It is pointed out that trace of oil, gas and asphalt have been recorded at intervals within and between the two Glen Rose zones by Trinity failures in the basin, and that Opelika may be an exception with production existing where minor showings prevailed elsewhere.

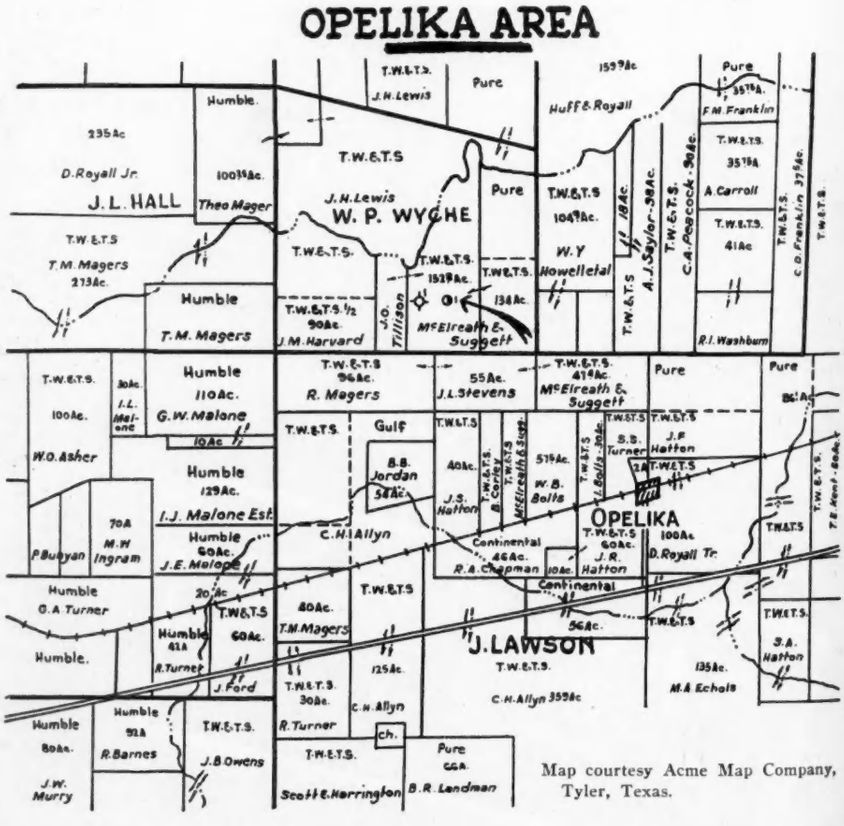
Three Previous Failures

The Opelika structure has been rated as an outstanding prospect for deep production, based on abnormal structural relief recorded by three previous Woodbine failures drilled by A. R. McElreath and F. W. Suggett, Fort Worth, and The Pure Oil Company in the area in 1933 and 1934. The Fort Worth independents control 500 full royalty acres in the area, while The Pure Oil Company holds lease on about 700 acres. The three majors responsible for the deep strike pooled their leases to make a 12,000-acre block, and each have one third working interest. The Opelika structure has a closure estimated at between 500 and 600 feet. It has been touted as one of the best lower Trinity prospects in the basin area, although barren of production in the upper Cretaceous.

Deep exploratory work on many structures in the basin area that failed to yield production in the Woodbine can be safely forecast now that Opelika has opened a new era for the district. Prospecting in the lower section of the basin will require 10,000-foot tests, more or less.

Lower Glen Rose Gas at Long Lake

Gas production from the lower Glen Rose member of the Trinity looks promising for the Long Lake field, southwestern Anderson County, as result of showing made when formation tester was used at 8855 feet. Tide Water Associated Oil Company and Seaboard Oil Corporation's Monnig Bros. 7, first Trinity test for this large Woodbine oil and gas producing area, entered the lower Glen Rose section at 8748 feet, with an elevation of 233 feet,



Map courtesy Acme Map Company, Tyler, Texas.

and logged oolitic lime at 8833-8855 feet. Formation tester used at the latter depth failed to remain open sufficient time for a decisive production test, but the volume of gas was adequate to justify the landing of 7-inch pipe to try for a completion regardless of results attained in deeper drilling. First stringer of anhydrite was found between 8335 and 8365 feet, and massive anhydrite at 8643-8748 feet. Drilling was in progress at 8924 feet in hard brown lime, according to late reports.

Roeser & Pendleton, Inc.'s V. W. Bowyer 3, third Trinity project for the Cayuga field, Anderson County, logged top of Georgetown lime at 4749 feet, or 4432 feet sub-sea, and has resumed drilling after cementing 9⅝-inch pipe near this level. On this lime marker it is 118 feet lower structurally than J. N. Edens 15, deep gas and distillate producer, and should be the best oil prospect of the trio because of being removed from the gas cap area.

Drilling was underway at 8616 feet late last week on Tom F. Hunter, American Liberty Oil Company et al's G. E. Gage 1, first deep test for the Blackfoot structure, Anderson County, after fulfilling original depth contract and measuring hole at 8527 feet. Electrical formation surveying instrument was run at the latter depth, placing top of massive anhydrite at 8443 feet, with an elevation of 384 feet. It is due to penetrate the lower Glen Rose, or projected producing horizon, over the week end.

Other Tests Have Trouble

The Pure Oil Company's W. B. Kendrick 16, Trinity test for the Mexia field, developed crooked hole in drilling to Woodbine at 2984 feet, and lost section of drill pipe at 2336 feet while conditioning the hole. C. F. Lytle et al's Roy Simmons 1, Trinity test for depleted section of the Wortham field, Freestone County, was drilling in lower Woodbine, with an elevation of 432 feet. J. Edward Mills et al's Sam Grucholski 1, Falls County wildcat and 5 miles southwest of Kosse, is reported to have missed the usual anhydrite section in drilling to lower Glen Rose at 5526 feet. Casing will be run to about 5300 feet to make a production test in oolitic lime zone logged in the Glen Rose, and if no production follows, owners plan to deepen to the Travis Peak series. The latter is due within the next 400 feet, according to a spokesman for the group.

Crooked hole in Paluxy zone has delayed drilling operations on Humble Oil & Refining Company's L. K. Riggs 1, Trinity test for the northeast edge of the Van field, Van Zandt County. Top of Paluxy series was logged at 4645 feet, or 4179 feet sub-sea, and the hole was deflected 9 degrees in water sand at 4664 feet. It has plugged back 3840 feet, or 22 feet below the 9-inch casing seat. Reports indicate that Tide Water Associated Oil Company and Seaboard Oil Corporation may exercise their contract rights to take over Geo. Greer and American Liberty Oil Company's Freeman 1, recently abandoned as a failure in the Paluxy at 4610-4799 feet, and deepen this east Van test to the lower Trinity. The hole was filled with mud and surface pipe left intact to permit deeper drilling when rig was moved off early last March.

Search for production in the lower Trinity along the Mexia-Talco fault plane includes Stanolind Oil & Gas Company, M. J. Delaney et al's J. P. Hawks 1, located west of Campbell, Hunt County. Drilling was resumed last week after cementing 13-inch pipe at 533 feet. Penn Oil Company, Elmer S. and Fox Wood's R. B. Parrish 1, located 5½ miles northeast of Lone Oak, is temporarily idle, pending title work, in Georgetown lime at 4711 feet. It has an elevation of 597 feet, and will test the Trinity.

John G. Mayo et al, have started moving in materials to proceed with the drilling of a Trinity test on the east end of the Mount Enterprise-Concord faulted structure, extending east to west across Rusk County. Location is near Shelby County line, and in the southwest corner of the Garrison-Sanford 161-acre lease, Wm. A. Corder Survey, 4 miles east of The Pure Oil Company's Faulkner 1, which drilled 476 feet into the Travis Peak to 7799 feet with negative results.

Woodbine Interest Lags

Exploration of the Woodbine in the East Texas basin is being generally forsaken by operators and companies since the Trinity took the spotlight. In Houston County, American Liberty Oil Company et al's J. A. Bean 1, located about ½ mile southwest of the discovery gasser-distillate producer for the Grapeland geophysical prospect, has been completed with an initial of about 60,000,000 feet of sweet gas and distillate from Woodbine at 6018-36 feet. It was plugged back from 6257 feet, and casing gun-perforated, after excluding water. This concern has moved rig to the northeast corner of the W. L. Moody 55-acre tract, S. C. Parker Survey, 1½ miles northwest of the original producer to proceed with its 3-well drilling obligation. In northeastern Houston County, Placid Oil Company et al's J. E. Elliott 1, J. M. Procella Survey, was drilling lower Woodbine at 6460 feet after passing up good show of oil and gas, with salt water in top of Woodbine at 5870 feet, or 5499 feet sub-sea. It will continue to the Georgetown lime for geological information, then plug back and run pipe to try for a producer.

East Texas Allowable to Stand

Kilgore.—The proration factor used in apportioning production among non-marginal wells in the East Texas field

Condensed Log of Important Lower Trinity Tests Drilled in the East Texas Woodbine Basin Area

	Elev.	Top Georgetown Lime	Paluxy Series	Upper Glen Rose	1st Anhydrite	Massive Anhydrite	Lower Glen Rose	Travis Peak
ANDERSON COUNTY								
Blackfoot Structure								
Tom F. Hunter—American Liberty et al No. 1 G. E. Gage	384	5681	6758—7029	7029—....	8080	8443—....		
Cayuga Fields								
Tide Water, Seaboard's N. N. Wills 21-A	308	4524	5662—5890	5890—6827	6827	....—7203	7205—7991	7991—9085
J. N. Edens 15	313	4627	5792—6030	6030—6974	6974	....—7365	7365—7570	
Long Lake Field								
Tide Water, Seaboard's Monnig Bros. 7	233	5904	7010—7205	7205—8343	8343	....—8748	8748—....	
HENDERSON COUNTY								
Opelika Structure								
Tide Water-Seaboard-Humble's McElreath & Suggett 1	392	4950	6006—6270	6270—6930	6930	....—....		
Quinlan Structure								
Superior O. Co. et al's P. D. Paul 1	489	3596	4247—....	....—5190	5190	5339—5450	5450—6501	
RUSK COUNTY								
Mt. Enterprise Structure								
Pure's Faulkner 1	563	3446	None	....—....	5310	5945—6167	6167—7323	7323—7799
RAINS COUNTY								
Emory Structure								
Humble O. & R. Co's. O. L. J. Easter 1	438	5003	6079—6347	6347—6985	6985			....—8482
TITUS COUNTY								
Talco Area								
J. Z. Werby et al Sam Williams 1	341	3485	4275—....	....—....	5442	....—5676	5676—6219	
VAN ZANDT COUNTY								
Van Field								
American Liberty et al's J. A. Freeman 1	515	3812	4610—4799	....—....				
Pure Oil Co.'s V. T. Davis 1	488	3753	4729—4945	4945—5461	5461	....—5825	5825—6490	6490—7501

will remain at 2.32 percent of the rated hourly flow of individual wells on the May schedule to be issued by the commission, according to reports.

Allowable production of the field will be in excess of 460,000 barrels daily at the start of the new period, representing a gain of about 32,000 barrels since the above low factor was adopted June 21, 1936.

Early last week the field was credited with an allowable of 459,063 barrels daily from 22,526 wells, including 16,988 pumping and flowing wells rated as marginal producers. There were also 42 inactive wells accounted for on the above report.

2.86 Pounds Decline

The revised bottom-hole pressure survey completed by commission engineers on April 12 placed the average for the field at 1167.61 pounds, or a decline of 2.86 pounds since March 12. The pressure decline the previous month, according to commission's figures, amounted to only 35/100 pounds, using 34 key wells. Pressure readings were taken in a greater number of wells for the April 12 report, and a sharp decline was anticipated because of key wells being more generally distributed.

Drilling operations are currently near the highest level attained this year, with 70 rigs active. The field contributed 43 flowing and pumping wells the past week, including 14 completions that did not penetrate the Woodbine sand more than one foot because of the bottom-hole water hazard.

EAST TEXAS
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
JOINER AREA—		
Atlantic Ref. Co., H. L. Griffin 13 (80-ac)	2500	3635
Cook Drl. Co., J. R. Alford 3-B	750	3674
Davis & Hart, W. B. Perry 5-B (157½-ac)	1800	3645
Gen'l American Oil Co. (was Trippmeade Co.), J. L. Maxwell 2	4500	3815
Humble, Kangerga Bros. 63-A (333¼-ac))	5500	3665
W. B. Kee 14 (95.38-ac)	8000	3728
R. C. Langley et al, J. R. Alford 1	2500	3654
Marko O&G Co., Tom Lacy-Pure 5 (50-ac)	600	3657
Sun Oil, Schuyler & Schuyler 8-A (50-ac)	1500	3647
KILGORE AREA—		
Alamo Pet. Co., W. P. Luse 1-B (14½-ac)	5000	3554
Brown & W. H. Wilson, M. R. Terrell 4 (24-ac)	2000	3667
L. W. Callender et al, W. B. Walker 19 (174.3-ac)	1200	3603
C. A. Everts Drilling Co., H. F. Crews 9-A (64-ac)	7000	3825
Flanagan Prod. Co., W. B. Walker-Tidal 8 (91.3-ac)	1500	3608
Friedman Oil Corp. & Swindler, Mayfield 9 (123-ac)	1500	3687
Mayfield 13 (123-ac)	1200	3684
Gen'l American Oil Co., Sam Williams 20-B (112-ac)	1200	3630
Sam Williams 27-B (112-ac)	750	3639
Gralenor Oil Co., A. A. King 10 (78.23-ac)	2500	3668
Gulf, Willie Holt 29 (185.12-ac)	10,000	3597
Thos. D. Humphrey, A. Spear 3-B (22-ac)	7000	3667
R. C. Lipscomb-Southern & Thurmond, R. L. Martin 5 (32.02-ac)	3600	3665
Magnolia, John Radford 36 (252-ac)	5500	3655
Alex McCutchin et al, Elder Bros. 4 (20-ac)	120	3585
Shasta Oil Co.-Pet. Finance Corp., Laird-Crim 5 (27-ac)	7800	3540
Shell, W. W. Elder 37 (196.05-ac)	9500	3592
W. W. Elder 41 (196.05-ac)	9600	3576
Sun Oil, J. S. Elder 13 (75-ac)	6400	3553
Tide Water Associated, J. S. King 18 (81.18-ac)	5600	3580
Trentman Oil Corp., H. E. Thomas 7 (40-ac)	2000	3715
LONGVIEW AREA—		
Albert Baggett & Beard, H. B. Owens 2 (22½-ac)	2000	3750
Fain-McGaha Oil Corp., E. W. Clements 10 (50-ac)	11,000	3625
Humble, Mary Wells 9 (69½-ac)	4800	3744
Thos. D. Humphrey, F. P. Branson 1-C	1500	3638
C. A. Lester & Duffield, J. T. Jones-Humble 4 (40.7-ac)	1200	3729
Magnolia, H. Fenton 5 (50-ac)	1500	3793
H. Hampton 27 (153.33-ac)	7000	3695
Margay Oil Corp., O. M. Victory 12 (97-ac)	5800	3592
Stanolind, C. E. Hindman 11 (46.27-ac)	9300	3693
J. C. & R. S. McKinley 53-B (84-ac)	7200	3663
Stanolind-Tide Water, J. C. Persons 26 (147.82-ac)	8400	3548
Sun Oil, J. Hargrove 19 (200-ac)	500	3723
Sam K. Vierson et al, O. M. Victory 6 (25-ac)	6000	3592
ANDERSON COUNTY (Long Lake Field)—		
Tide Water Associated & Seaboard Oil Corp., Z. Williams 2 (40.28-ac)	2000	5342
ANDERSON COUNTY (Cayuga Field)—		
Tide Water Associated & Seaboard Oil Corp., T. Royall 2 (100.61-ac)	500	4092
FRANKLIN COUNTY (Talco Field)—		
Humble, D. Reed 1 (80.94-ac)	84	4338
L. Wims 1 (172.31-ac)	367	4340
HENDERSON COUNTY (Cayuga Field)—		
Cortex Pet. Co.-Rio Oil Corp., A. W. Pettiette 1 (99¼-ac)	3000	4094
Roeser-Pendleton, Inc., B. H. Wathen 3 (93-ac)	3600	4104
HOPKINS COUNTY (Sulphur Bluff Field)—		
Shell Pet. Corp., J. G. Reynolds 2 (200-ac)	1500	4528
HOUSTON COUNTY (Grapeland Field)—		
American Liberty Oil Co. et al, J. A. Bean 1 (61.02-ac)	¶60	6257
TITUS COUNTY (Talco Field)—		
Byrd-Frost, Inc., R. H. Harper-Gulf 2 (40-ac)	410	4239
Housh & Thompson, Inc., J. Hargrove 3 (75-ac)	410	4337
Humble, H. C. Fry 3 (87-ac)	198	4325
W. E. Wilson 1 (40-ac)	143	4309
R. E. Moore, Tr., W. T. Edwards 2 (20-ac)	640	4290
VAN ZANDT COUNTY (Van Field)—		
Overton Ref. Co. (John D. Wrather) G. W. Carter 6 (171-ac)	480	2907
CASS COUNTY (Rodessa)—		
Magnolia, L. A. Haywood 9, Priscilla Evans sur	480	5970
L. A. Haywood 11, Priscilla Evans sur	1300	5952
L. A. Haywood 12, Priscilla Evans sur	260	5987
Lewis & Wicks 8, Alex Archer sur	380	6055
Allday Estate 3, Priscilla Evans sur	448	5968
L. A. Haywood 10, Priscilla Evans sur	360	5975
Ohio, R. P. Willis 17, SFIW sur.	299	5986
Texas Co., N. A. Rambo 2, Cass County School Land sur	504	6011
G. H. Vaughn, R. P. Willis 1, SFIW sur	320	5987
United Gas, Allday 1, Priscilla Evans sur	975	5915
MARION COUNTY (Rodessa)—		
Holcomb, Thomasson et al, Lizzie Henderson 1, R. Bennington sur	96	6405
HARRISON COUNTY—		
Kennedy & Batchelor, Lane & Greer 1, J. M. Baker sur	10	2364

*Failures; †Junked; ¶Million cu. ft. gas.

Seeks Recovery of Taxes

Austin.—Peerless Carbon Black Company has filed suit in the 126th District Court seeking to recover taxes paid on carbon black produced. The company contends that the manufacturing process it uses and the products produced are excepted in the tax statute now in effect.

SOUTH TEXAS
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
SAN ANTONIO DISTRICT		
ATASCOSA COUNTY—		
Heirholzer Bros., Fee 1, J. Poitevent sur 5	*	509
J. R. Hinton, Weigand 2, A. A. Donnivan sur	*	200
BASTROP COUNTY—		
J. L. Collins Co., W. T. Turner 1, 245-ac tr A. Litton sur	*	2003
CALDWELL COUNTY—		
Blundell Oil Co., Luce 2, J. A. Neill sur (Branyon)	150	2270
J. R. Brinkley Jr. Oil Co., Bridges 1, 196-ac tr, Solomon Seal sur (Dunlap)	*	2246
Chiquita Oil Co., Robertson 3, J. A. Neill sur (Branyon-Buchanan)	35	2258
Easton & Manning, Lawler 3, Pinchback sur (Buchanan)	87	2265
Lawler 4, J. Pinchback sur (Buchanan)	1206	2157
L. M. Kniffin, J. M. Young 1, J. R. Miller sur (Branyon)	8	2353
J. W. Leonard Jr., E. B. White 1, J. W. Pinchback sur (Branyon-Buchanan)	20	2306
Lincoln Pet. Co., M. W. Calliham 3, Dillard Cooper sur (Branyon)	15	2160
Oliver & Pearson, W. W. McCrory 2, S. A. Neill sur (Branyon)	20	2215
R. S. Wyrrick et al, Magee 1, J. A. Neill sur (Branyon)	1500	2183
GUADALUPE COUNTY—		
J. E. Clark, Anderson 1, 89.9-ac tr, Tobt. Hall sur	*	2545
Marts & Beavens, Inc., Chris Grimm 2, Green DeWitt sur (S. Darst Creek)	*	2420
S. Robertson et al, E. H. Blumberg 1, 200-ac tr M. Baker sur	*	998
DUVAL COUNTY—		
Atlantic, W. A. Lowe 1, sur 466 (Lowe Ranch)	*	4516
Bowles & Borsodi et al, J. D. Sutherland 1, sec 126 (Sarnosa)	*	2857
A. J. Brinkoeter, Rodriguez 1, sur 212 (Seven Sisters)	100	2657
Conservative Oil Co.-DCRC, Brown-Sentz-Murrel 3, blk 9, sec 52 (Colmena)	35	1462
Diamond Half Oil Co., J. F. Sinclair 1, sec 405, Eliz. Gravis sur	*	3010
N. V. Duncan, Worden & Drought 6, sec 51 (Charamousca)	200	1531
Gorman & Yoakum Drilling Co., W. K. (Sophie) Hoffman 1, sec 117 (Hoffman)	*	3003
Frank Gravis, Vaello Puig 1, 330 ft s & w 330-ac lse out of 1760.73-ac tr, Andres Garcia Heirs (Gravis)	1250	4755
H. F. Grimm, E. Mew 1, sur 289	*	5005
Henshaw Bros. et al, E. H. McGuffin 1, SK&K sur 230 (Premont)	*	3806
Humble, DCRC 16-C, sec 901 (Lopez)	432	2017
DCRC 17-C, sec 901 (Lopez)	*	2160
Dowdy-Fee 10, sec 272 (Seven Sisters)	*	2600
W. R. Peters 1A, sec 397 (N. Kohler)	*	3082
Magnolia, DCRC 3, sec 152 (Charamousca)	*	1771
E. & E. Labbe 3, sec 221 (Labbe)	*	2922
J. O. Wilson 17, sec 248 (Gov't Wells)	*	2668
John J. O'Hern, S. Benavides 2-C, blk 24, Mesquite gr (Cole-O'Hern)	2528	2880
Thomas Est. & Lockhart Bros., Lillian (Atlee) Parr 1, E. H. Valentine sur (Thomas-Lockhart)	¶5 125	4672
JIM HOGG COUNTY—		
French Oil Corp., Paula V. de Garza 3, blk 1, sec 269 (Alworth)	*	1070
LA SALLE COUNTY—		
W. H. Vernor, M. G. Jeffries 1, HE&WT sec 726	*	860
McMULLIN COUNTY—		
R. P. Lightfoot, H. L. Lark 9, blk 118, Scrugham sur (Calliham)	5	1064
STARR COUNTY—		
Glen Harroun et al, V. C. Guerra 1, blk 6, Tr B, Frank R. Campbell sub	*	3003
A. A. Kelley, Higinio Gonzalez 1, 100-ac lse sh 67, porc 71, Juris of Mier	*	356
Sun, Chapatol Land Co. 4 (second hole) por 99 (Samfordyce)	*	2844
WEBB COUNTY—		
O. W. Killam, A. M. Bruni 50, blk 10, sec 8 (Cole-Bruni)	520	3431
Laurel Bros. 1, sur 333 (Killam)	192	2038
Mortimer & Springer, Lopez 14-B, sec 112 (Lopez)	620	2260

Company, Well and Location	Init. Prod. Bbls.	Depth
Ohio Fuel Supply Co., DCRC 2, blk 20, sur 100	*	2203
H. J. Porter, A. M. Bruni 2, sur 585 (Cole-O'Hern)	*	2965
E. J. Sawyer, Chas. Webster 2, sur 684 (Carolina-Texas)	*	3106
ZAPATA COUNTY—		
George Buck, A. D. Haynes 5, sec 14, Haynes sub (Comitas)	*	1160
Sam Evans, S. Bustamente 8, share 34 (Escobas)	25	1278
S. Bustamente 9, share 34 (Escobas)	53	1280
M. Garcia Est. 3, blk 19, Douglas sub (Escobas)	72	1348
William H. Winn, Carlos Vela et al 2, blk 6, por 20 (Lopena)	¶20	2408
Zapata Corp., M. Garza Est. 10, blk 21, Douglas sub (Escobas)	20	1197
M. Garza Est. 14, blk 21, Douglas sub (Escobas)	75	1141
CORPUS CHRISTI DISTRICT		
ARANSAS COUNTY—		
Atlantic, McCampbell Ranch 5-B, lot 5, blk 39 (McCampbell)	350	6548
Wheelock & Collins, Wheeler 1, W. S. Tuton sur, tr 2-D	*	7020
BEE COUNTY—		
W. K. Walton et al, A. M. Holzmark 1, J. A. York sur	*	4304
CALHOUN COUNTY—		
Humble & Plymouth, P. H. Welder 4-B, Agaton Sisneros sur (Heyser)	850	5491
HIDALGO COUNTY—		
Ralph E. Fair, Inc., M. F. de Chapa 1, share 250, por 39 (Samfordyce)	*	3144
Sterling O. & R. Corp., John C. Engelman 1, lot 5, blk 95, MTL&I Co. sub (LaBlanca)	¶25 & 200	8012
JIM WELLS COUNTY—		
Diamond Half Oil Corp., J. W. Cupple 1, sec 76 of Haldeman subd (Premont)	*	3200
LIVE OAK COUNTY—		
Simmons O. & G. Co., Clara McGriff 2-B, Louis Romaro sur 395 (Oakville)	125	2830
NUECES COUNTY—		
Houston Oil Co., Fee 2, sur 582 (Saxet)	850	5812
Humble & Barnsdall, Henry Cordz 2, lot 13, blk 48, Flour Bluff & Encinal Garden tr (Flour Bluff)	850	6660
A. A. Webster 3, lot 26, sec 48 (Flour Bluff)	700	6658
Potter Pipe Line, Aaron Cohen 5, 25-ac tr, Villareal gr (Saxet Hts)	275	4100
Southern Minerals Corp., F. J. Smith 13, blk 9, Sheppard Farm Lots (Saxet)	650	4550
Tule Lake Oil Co., Hocker-Sevier 1, Villareal gr (Saxet)	173	4895
Sam E. Wilson Jr., Wagenschein 1, lot 57 (Saxet Heights)	190	4080
REFUGIO COUNTY—		
Floboots Oil Corp., J. M. O'Brien 3-D, blk 21, E. H. Winfield sur (Greta)	480	4390
Hewitt & Dougherty, M. F. Lambert 47, Swisher sur, A-398, blk 48 (Tomoconnor)	2000	5909
Houston Oil Co., Rooke 29, T. Mullen gr (Refugio)	950	3883
United Prod. Co., M. F. Lambert 46, blk 43, Swisher sur 7 (Tomoconnor)	950	5906
M. F. Lambert 48, J. M. Swisher sur (Tomoconnor)	875	5939
SAN PATRICIO COUNTY—		
L. A. Cage Prod. Co., J. W. Mayo 7, J. N. W. Ottman sur (Taft)	450	4365
Esves Oil Co., J. L. Brittain 7, blk 8, sec 6, 2nd add Taft Farm lots (Taft)	*	4985
Humble, J. W. Mayo 21, J. H. W. Ottman sur (Taft)	375	3986
Phillips, Henry Schmidt 1, 990 ft el, 2310 ft sl of sec 81, Pauls subd of Coleman-Fulton Pasture Co. lands.	700	7005
VICTORIA COUNTY—		
Barnsdall & American Liberty, Pickering & Roos 14, J. M. Brownson sur A-371 (Placedo)	200	4777

*Failures; †Junked; ¶Million cu. ft. gas.

Duval Hearing May 6

Austin.—The Texas Railroad Commission has scheduled a hearing on the Conoco-Driscoll field in Duval County for May 6 at Austin.

Continental Oil Company owns the entire field and will present evidence at the hearing relating to gas-oil ratios, proper allowables, and other questions of this nature.

SOUTH TEXAS

San Patricio strike may open new shore-line trend.

* * *

Get underway in two new areas in Duval County.

* * *

Balcones Fault test results in disappointment.

San Antonio.—Lonnie Glasscock's Albinger 1, Bee County, was blowing through drill-stem test under a pressure of 3000 pounds and spraying considerable distillate April 23, after an attempted blowout in the Conroe sand was controlled. The well had cored sandy shale with oil odor from 5922-24 feet, hard sand cap at 5924-30 feet, and was coming out of the hole with a 15-foot core to 5945 feet when it tried to blow out and the pumps were started up to kill the flow. The last core cut like sand from top to bottom.

Establish New Trend

Corpus Christi.—A new trend of exploration may develop from Phillips Petroleum Corporation's new Hetrostegina sand strike 4 miles northwest of Gregory in San Patricio County. The well, Henry Schmidt 1, flowed at the rate of 3 barrels of 34 gravity oil per hour through 5/32-inch choke under tubing pressure of 1680 pounds and casing pressure of 1990 pounds, and is showing a high gas/oil ratio. The field has been named Midway.

The well, located 990 feet from the east line and 2310 feet from the south line of Section 81, drilled to 7005 feet after passing through an oil and gas sand at 5316-39 feet. Casing was set at 5560 feet and perforated at 5336-38 feet with nine shots, completion being affected at this point.

This well is reported to have run normal structurally and lower than several failures in the district. It is indicated by the regional structural picture that an entirely new shore line has been established by this producer, along which other fields are probable.

About 6200 feet east of this well and in Block M of the Pauls Subdivision, Conroe Drilling Company's T. A. McKamey 1 developed 1700 feet of salt water on 10-minute drill-stem test at 5370-74 feet. A sand section above this level was said to have shown oil and gas. Wheelock & Collins were about 5300 feet in Inez Willis 1, lot 3, block E, in the same area.

Victoria Seems Success

Magnolia Petroleum Company's continued efforts to establish oil production on the Telferner prospect in Victoria County seems to be meeting with a little success. A. B. Wagner 1, 660 feet south of the discovery well, continued to swab wash water and oil. The hole had been swabbed to within 150 feet of bottom and the fluid could not be lowered. This test had been drilled to 4240 feet, but plugged back to 2528 feet and perforated casing at 2519½-24 feet.

Production tests were being made in Edwin M. Jones and Buckingham Oil Company's McCampbell Ranch 2-B, block 40, deep test in the McCampbell field, Aransas County. After testing salt water through perforations at 7350-60 feet, a squeeze job was effected at that point and at 7292-76 feet, using 85 sacks in each place. Casing then was perforated at 7336-46 with 20 shots and sand tested. The Frio sand had been logged at 7320-7400 feet, 800 feet deeper than present Marginulina production.

The whole field is in the throes of a deep exploratory campaign. Atlantic Refining Company's McCampbell 6-D, Block 41, had several sands below the regular horizon showing oil, gas and salt water and was going ahead below 7000 feet. Buckingham Oil Company was coring at 7905 feet, deepest thus far in the field. Rutherford Oil Corporation and Clayton Eaton were coring for the 7300-foot sand in W. A. Scrivner 1, Block 11.

Near Blow Out Level

Barnsdall Oil Company's deep test, Kate Edwards 1-A, on the Lamar prospect in Aransas County, was drilling at 7825 feet, nearing the 8000-foot level where the first well was lost due to a blowout. Wheelock & Collins' Wheeler 1, William Toton Survey, has been abandoned at 7020 feet in the Frio. It topped the Big sand at 5331 feet.

I. J. Allen and Seaboard Oil Corporation were ready to core for the 6500-foot sand in J. B. Chapman et al's 1-B, one mile northeast of the Chapman Ranch field, Nueces County. The well, located NW SE Section 37, is the third operation to be commenced since the field was discovered some time ago. The first and second wells are producing from different sands.

Camp Production Company's C. P. Wardner, Trustee 1, in the northeast portion of Section 12, Stratton Subdivision, Nueces County, was testing a series of sands encountered in the Frio. The well

drilled to 6715 feet, plugged back and set 5½-inch casing at 6111 feet. Distillate and gas sands were found at 4706-16 feet, 5244-46 feet, 5618-27 feet, 5796-5806 feet and 6104-8 feet. The well is ¾-mile northeast of Stanolind Oil & Gas Company's Stratton 1, discovery well of the field, a distillate producer.

Several miles north of the above well and just west of the Agua Dulce field, Nueces County, interest centers around United Production Corporation's Harvey 1, a deep test which is progressing near 8150 feet. It has had several interesting showings above this level.

Gem Oil Corporation's Stockton 1, offset to the London field discovery well, Nueces County, flowed both oil and salt water from the regular sand at 4719-23 feet and was deepened to 4761 feet, where it is being completed to open a new sand A 2-minute drill stem test at 4752-61 feet developed 400 pounds pressure with small amount of oil and mud. A 5½-inch liner then was set as a weephole job with perforations opposite the sand. The well was cleaning into pits showing a large volume of gas and a spray of distillate through ¼-inch choke showing pressures of 1800 pounds on tubing and 1700 pounds on casing.

Nueces County's key development continues in the deep sand area of the Saxet field where more than a score of rigs are running at depths ranging between 6000 and 7000 feet.

Hiawatha Oil & Gas Company's John Roemer Estate 1, in the Seadrift area of Calhoun County, is still tied up with a stuck drill stem in its projected 10,000-foot test. The well is bottomed at 8470 feet, apparently the victim of heaving shale.

Southern Jim Wells County comes in for considerable attention with two deep tests being started. Magnolia Petroleum Company et al are preparing to rig up Seeligson 7, 4 miles southeast of Ella for a 9000-foot project to carry to at least the Conroe sand, while Wellington Oil Company is waiting on rig for C. D. Sevier 1, 2 miles northwest of the same town. It will be drilled to 6500 feet to test Hockleyensis sands.

Get Busy in New Duval Fields

Laredo.—Immediate development of Eastern Duval County's two new oil fields is assured with new locations being staked for several offset and outpost tests. These strikes bring the number of fields discovered along this trend during the past several months to 3, thus creating one of the hottest plays in South Texas in some time.

Frank J. Gravis' F. Vaello Puig 3, San Andres Grant, four miles northeast of the Sweeden field, flowed 8 to 9 barrels of 45 gravity oil per hour through ⅛-inch choke under pressures of 750 pounds on tubing and 950 pounds on casing. The sand section is reported to have been found between 4730-55 feet in the Hockleyensis, but some reports are that 12 feet of sand was found between 4754-66 feet, this being the total depth. Details are not available as this well was closed on all information.

Offsets to the above well are held by several different companies and immediate drilling is expected. The majority of the territory between this producer and the Sweeden field, however, is controlled by the Hiawatha Oil & Gas Company. It is supposed to be on an entirely different structure from Sweeden, available information indicating that its production will run to the north. The field will be known as North Sweeden or Gravis pool.

About 18 miles to the north of this producer, Thomas Estate and Lockhart Brothers are ready to skid onto Lillian Parr 2, NE SW H. Valentine Survey No. 26, north offset to the discovery well of the Thomas-Lockhart field. The discovery flowed 5 barrels of 58 gravity oil per hour through ⅜-inch choke from upper Pettus sand at 4659-72 feet, showing a high gas/oil ratio, and pressures of 1450 pounds on tubing and 1750 pounds on casing. This new district has considerable broken acreage and should receive a rather active development campaign.

In the Government Wells sector, work is being carried on to develop the new Loma Novia sand producing spot between the field bearing that name and the Seven Sisters production. A. J. Brinkoeter's Rodriguez 2, east offset to Rodriguez 1, Section 212, is rigging up. The first well made 4 barrels per hour on pump at 2656 feet, the sand being found at 2646-56 feet.

O. W. Killam was coring for the Mirando sand in Garcia & Villareal 1, 1200 feet west of Laurel 1, completed several days ago to open the new Killam field of Webb County. The producer, in the southeast corner of Section 333 and 2 miles northeast of Oilton, pumped 8 barrels per hour from Mirando sand at 2031-35 feet.

This operator was successful in materially extending the Bruni pool, same county, to the southwest. A. M. Bruni 50, Block 10, flowed 18 to 20 barrels per hour through 3/16-inch choke from 3431 feet. It topped the sand section at 3049 feet, but set casing at 3420 feet.

Deep Edwards Test Fails

San Antonio.—One of the most important wildcats drilled along the Balcones fault zone in several years was brought to unsuccessful completion when Diamond Half Oil Company's E. Bibbs et al 1 encountered schist in Trinity sandstone at 5510 feet. The well, on the west side of Darst Creek field, Guadalupe County, attempted to open deeper production in this Edwards limestone area.

An electric formation tester indicated possibilities in 30 feet of Navarro sand around 1300 feet, which showed oil on the ditch while drilling.

Several Trinity tests have been drilled through Caldwell and Guadalupe Counties during the past few years with no success. Information, however, is lacking due to the limited amount of exploration and the district generally is looked upon as being a favorable area in which to prospect for this type of production.

At this time at least one block is being assembled on the west side of a producing field of this immediate area for the purpose of drilling to these levels, but final negotiations are not complete.

Frio County Deep Test

In Frio County, Amerada Petroleum Corporation is drilling near 9200 feet in Halff & Oppenheimer 8, projected 10,000-foot Trinity sandstone test in the Pearsall field. It is the second 10,000-foot test for this ranch by the above company. The same operator has reentered Halff & Oppenheimer 1, abandoned in February 1933 at 6312 feet in the Edwards limestone, and will rework it. An acid treatment will be given the Austin chalk. This project is unusually interesting in that it is the first deep test ever drilled in the Pearsall sector. The well was located after an exhaustive study of the company's 83,000-acre block in a heretofore unexplored region of South Texas. At the time the well was drilled, showings in the chalk were considered insufficient to produce, but subsequent development has brought the limits of the field to within a short distance of the well. Likewise, new information concerning Austin chalk production makes this well look favorable to be converted into a producer.

The shallower Austin chalk areas of Guadalupe and Caldwell Counties continue to be most profitable from a production standpoint. Additional engineering and geological information has materially aided operators in locating and drilling wells into the fractured chalk zones with large wells resulting. Along the same trend, development is being revived in Edwards lime areas. Older fields, such as Luling, are being redrilled, only a few feet of the lime being taken in. The wells then are acidized and completed as good producers making only a small amount of water. This work is too new to definitely determine the recovery to be had, but initial flows suggest a profit from the projects.

New Brooks County Field

Mission.—Standard Oil Company of Texas established its second oil field for Brooks County when Mestina Oil & Gas Company 1 (Lease 2) developed 165 feet of fluid with good gas blow on a 12-minute drill-stem test from 2395-2405 feet. The test, through ¼-inch top and ⅜-inch bottom chokes, carried 45 percent 24 gravity oil and 55 percent mud, sand and silt. Casing is being set for completion. The sand is apparently in the Catahoula.

The well is located 3601 feet south and 2239 feet east of the northwest corner B. B. Garcia, Tract 11, and in the R. G. Salinas Survey, about six miles north of the same company's solidly owned Alta Mesa field.

The new discovery is at the same level as the main producing sand in the Alta Mesa field and gives rise to a trend of development through Brooks County in search of this shallow horizon.

This company is carrying on a conservative development campaign of its properties, running 3 rigs. One 8000-foot test had been drilled and the new discovery well was originally contracted as a deep operation. It is likely therefore that another deep location will be staked in the near future.

The Lower Rio Grande Valley district is at this time centering interest around several deep tests nearing critical depths. Stapper Petroleum Corporation's 8500-foot project on the Port Isabel Properties, E. Santo Grant, Cameron County, was below 7000 feet.

Sterling Oil & Refining Company continues to test Engelman 1, Lot 5, Block 95, 1 mile north of the other producer in the La Blanca deep field of Hidalgo County. The test was at last reports flowing 6 barrels of distillate per hour through ⅛-inch choke with a high gas/oil ratio. The pressures were 3050 pounds on tubing and 3300 pounds on casing. This test had drilled to 8012 feet, but casing was perforated at 7860-80 feet.

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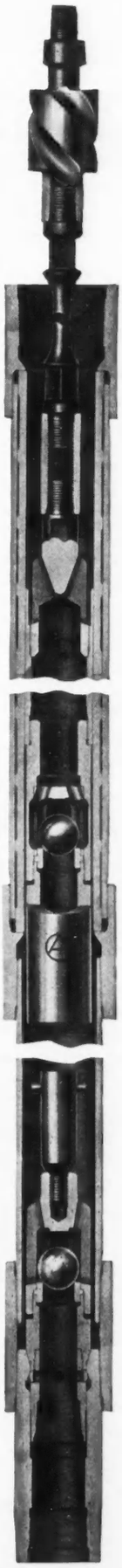

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AXELSON DEEP WELL PLUNGER PUMPS — SUCKER RODS

TEXAS GULF COAST

Pressure control vital to Clinton extension attempt.

* * *

Harris County wildcat flows 58 gravity oil and gas.

Houston.—After having considerable trouble for 30 days with gas pressures in Stanolind Oil & Gas Company's Oates 1, a wildcat approximately 4000 feet south of the discovery well at Clinton, C. Martinez Survey, Harris County, the crew pumped in 176 sacks of cement into the hole and April 23 shut down, waiting on the cement to harden. Of the 176 sacks pumped into the hole under a high pressure, about 96 sacks penetrated formations believed to have caused Oates 1 to attempt to blow out. After the cement has hardened the crew will try to come out of the hole with the drill pipe and test gas sands found down to 8783 feet.

For the past month the operators have been trying to come out of the hole with drill pipe in order to run screen and liner, but each time the pipe is pulled the well attempts to blow out. A 17-pound mud has been circulated and the returns show only 11 pounds weight.

Discovery Well Had Record Pressure

The discovery well at Clinton blew out and showed a pressure of 5100 pounds, believed to be the highest pressure ever recorded in the world on a wildcat. Those who have watched Oates 1 say it would show a pressure of 8000 pounds if it were tested today. Jim Harrison, drilling contractor, and members of the crews working on Oates 1 have done a marvelous job in keeping the wildcat under control. With Oates 1 "kicking" mud around 10 feet up in the derrick and surface connections showing a strain of high pressures for the past 30 days it is possible that the well may even yet blow out.

Bammel Wildcat Flowing Into Tanks

Hamil & Smith's Zapp 1, Bammel prospect, J. Farwell Survey, Harris County, was turned into tanks last week and is making 16 barrels of 58 gravity distillate and 1,000,000 cubic feet of gas daily through a quarter-inch choke, with a tubing pressure of 350 pounds and a casing pressure of 2200 pounds. The well is also flowing through a 9/64-inch bottom hole choke. Zapp 1 was completed in Cockfield sands from 6205 to 6211 feet.

In the Aldine area, Harris County, Texas Gulf Producing Company's Gillespie 1, S. Contreras Survey, was being swabbed at 7100 feet. Casing was perforated with 12 shots from 7097 to 7100 feet, after attempting to take several drill stem tests, the operators swabbed the well and it showed a little oil and mud. No salt water was shown.

Northeast of Ogburn and northwest of Clinton field, Harris County, H. M. Harrell & O. L. Brace's Bullock 1, C. Bowman Survey, was abandoned at 7005 feet after running an electrical logging device. The well was drilled to the Upper Saline Bayou formation. Top of the Cockfield was logged at 6275 feet.

Five Corners Extended Southeast

Five Corners field, Wharton County, was extended southeast last week when The Texas Company completed the second profitable producer in the area. Pierce Estate B-6, J. Hyland Survey, made 122 barrels of pipe line oil in 17 hours on gas lift and showed a working pressure of 340 pounds. Pierce Estate B-6 was drilled to 5572 feet and a drill stem test from 5551 to 5562 feet showed oil and salt water. Casing was set, and after swabbing for some time the well failed to flow. Gas was then injected into the well and it is making pipe line oil.

The Texas Company's Kluck 1, which opened a new gas producing district in the Texas Gulf Coast last week in Wharton County, was making an estimated 500,000 cubic feet of gas daily through a ⅛-inch choke, with a tubing pressure of 1575 pounds and a casing pressure of 2000 pounds. Kluck 1 was completed in Miocene sands from 4642 to 4657 feet.

Fourth 10,000-Foot Well

The fourth 10,000-foot well in the Texas Gulf Coast is Continental Oil Company's Robbins 2, Citrus Grove prospect, C. Franz Survey, Matagorda County. At the end of the week the well was down to 10,363 feet in heaving shale and washing to bottom. After setting a string of 8⅝-inch casing at 8910 feet the crew made around 300 feet a day on this well, but after coming out of the hole the shale heaved and will probably cause considerable trouble.

Southeast of production at Hastings field, Brazoria County, Humble Oil & Refining Company cored oil sand in Southwestern University 1 from 6085 to 6095 feet and set 5½-inch casing at 6080 feet. The well was being washed for a production test April 23.

Another location was made at South Bay City field last week by Hamman Exploration Company. Mary Cleveland 2 is 466 feet out of the northeast corner of a 62.7-acre tract in the E. Hall Survey. It is approximately 1900 feet north of the discovery well.

Two Fields Being Connected

Stanolind Oil & Gas Company's J. Damiani 1, completed making 802 barrels of pipe line oil daily, further substantiates the theory that Dickinson and Gillock fields, Galveston County, are really one field. Damiani 1 came in flowing through ¼-inch choke, with tubing pressure of 1625 pounds and casing pressure of 2150 pounds, from Frio sands at 8726 to 8750 feet. It is one of the best wells completed in the field.

After making a production test last week on Sun Oil Company's Hughes 8, Green Lake field, Galveston County, which showed salt water from 3894 to 3909 feet, the operators will try to locate the water.

North Extension at Silsbee

Approximately 1900 feet north of production at Silsbee field, Hardin County, Republic Production Company's Brooks 9, G. W. Brooks Survey,

TEXAS GULF COAST Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
AMELIA—		
Glenn H. McCarthy, Longe 4	420	5380
Humble, Buscheni 1	672	6780
Ephlin 1-C	*	7281
Industrial Inv. Co. 2	672	6780
BARBERS HILL—		
D. B. McDaniels, Wilburn 6	165	4921
BATSON—		
John Deering, Hooks 3 (wo)	150	5434
DICKINSON—		
Stanolind, Damiani 1	802	8770
FIVE CORNERS—		
Texas Co., Pierce Estate B-6	168	5572
GOOSE CREEK—		
Eagle Pet. Co., Smith 1	249	2431
HASTINGS—		
Humble, French 1	144	6110
Stanolind, S. Paul 3	564	6100
HUMBLE—		
Glass Oil Co., Herman 18	35	900
Morris Ranch Co., Horn 3	25	4404
MANVEL—		
Texas Co., Houston Oil Field Association 24	500	5708
MARKHAM—		
C. G. Hamil, Hudson 2	*	4159
NOME—		
Sun, Burroughs 1	480	6045
RACCOON BEND—		
Humble, Austin College 11-X	*	4123
R. G. Payne 20	120	4120
SEABREEZE—		
Sun, White Estate B-1	*	9637
SEGNO—		
J. K. Dorrance, Wing 3	720	5187
Gulf, Wing 1	432	5194
SOUTH HOUSTON—		
Stanolind, Holland & Price 5	432	4000
TOMBALL—		
Humble, Tomball Townsite, Unit 12, No. 1	540	5579
F. Martens 3	*	5575
HARRIS COUNTY—		
H. M. Harrell & O. L. Brace, Bullock 1, Ogburn area, C. Bowman sur	*	7005
Hamil & Smith, Zapp 1, Bammel area, J. Farwell sur	16	6623
JEFFERSON COUNTY—		
Humble, Jefferson Land Co. 1, Cheek prospect, C. Hillibrand sur	*	8458
WALLER COUNTY—		
N. Blumenthal, Kelly 1, ne of Hempstead, S. Hardin sur	*	4758
WHARTON COUNTY—		
J. F. Hutchins, Wensley 1, J. Tumlinson sur	*	5472
Texas Co., Kluck 1, Blue Basin prospect, J. Hyland sur	¶½	4657

*Failures; †Junked; ¶Million cu. ft. gas.

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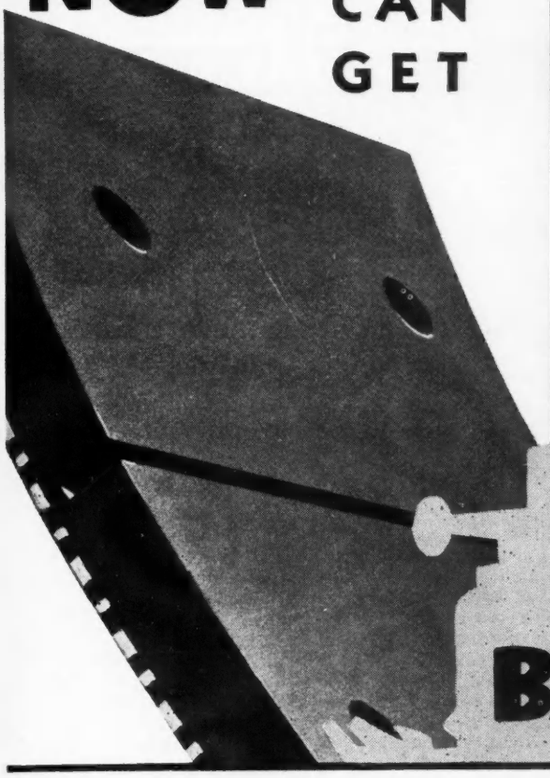

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made a 5-minute drill stem test from 6785 to 6805 feet through ¼-inch chokes and showed 1½ stands of high gravity black oil and a 550-pound pressure. At the end of the week, Brooks 9 was drilling in shale at 6889 feet and will be carried down to lower Cockfield sands.

Two new producers were completed last week at Segno field, Polk County. J. K. Dorrance's Wing 3, I&GN Survey 15, was completed at 5187 feet in Cockfield sands, flowing 30 barrels on the first hour gauge through ¼-inch choke, with tubing pressure of 800 pounds. Gulf Oil Corporation's Wing 1, the first well for the operators to complete at Segno, made 18 barrels per hour through ¼-inch choke, with tubing pressure of 520 pounds and casing pressure of 525 pounds, from Cockfield sands at 5194 feet. Top of the Cockfield was logged at 5125 feet.

Cheek Wildcat Abandoned

Humble Oil & Refining Company's Jefferson Land Company 1, Cheek area, C. Hillibrand Survey, Jefferson County, was abandoned at 8458 feet after making a series of tests. Jefferson Land Company 1 showed 2,500,000 cubic feet of gas daily and salt water through ¼-inch choke. Tubing pressure was 2000 pounds, casing pressure 1000 pounds, some time ago when casing was perforated with 10 shots from 7131 to 7134 feet. Several other tests showed gas, but salt water encroachment forced the company to abandon.

A second producer was completed by Glenn H. McCarthy on the north side of Amelia field, Jefferson County, last week. Longe 4 made 420 barrels of pipe line oil daily through ¼-inch choke, with tubing pressure of 950 pounds and casing pressure of 1000 pounds. The well was completed in sand showing oil from 5361 to 5380 feet. Seven-inch casing was cemented at 5359 feet. McCarthy has made location for Longe 5, 500 feet west of Longe 4, H. Williams Survey.

Humble Oil & Refining Company's Ephlin 1-O, C. Williams Survey, Amelia field, was abandoned at 7281 feet, but two new producers were completed at Amelia by the company. Buscheni 1 made 28 barrels per hour through ¼-inch choke from 6780 feet, and Industrial Investment Company 1 made the same amount from the same depth.

Gulf Oil Corporation was running 7-inch casing for a production test of a new producing horizon at Fannett field, Jefferson County, found in Junker 7 from 6535 to 6553 feet and at 6616 feet.

According to reports, the major portion of producing acreage at Cotton Lake field, Chambers County, was sold last week. Texas Crusader Oil Company purchased from Glenn H. McCarthy 340 acres, on which are seven producing wells and one dry hole, for $700,000. Around $300,000 was paid in cash and the remaining $400,000 is to be paid out of oil.

South of Cotton Lake, Salt Dome Oil Corporation was preparing to test Lawrence 1-D, S. Burney Survey, Chambers County. The hole was dug to 6525 feet in sand showing oil after logging the top of the sand at 6514 feet. Several drill stem tests failed in this sand, so 7-inch casing was set at 6521 feet.

SOUTH LOUISIANA

Another producing sand on Jennings southwest flank.

* * *

Test on southeast side of Lafitte gets deep showing.

* * *

Southern Sulphur Company releases maritime holdings.

Lake Charles.—A new producing sand was discovered on the southwest flank of Jennings field, Acadia Parish, when Superior Oil Producing Company completed Leckelt 2, Section 42-9s-2w, in Lower Miocene formation, flowing 148 barrels of 39.8 gravity oil through a 12/64-inch choke with a tubing pressure of 350 pounds and a casing pressure of 950 pounds. Seven-inch casing was perforated with 10 shots from 5780 to 5790 feet. The company made location for Moresi 1, at 521 feet south and 935 feet east of the NEc SE of Section 42-9s-2w, being in Section 41-9s-2w.

The third 12,000-foot well for the Louisiana Gulf Coast was established last week when Humble Oil & Refining Company's Elender 1, Houma gas field, Section 23-19s-19e, Terrebonne Parish, passed the mark and was drilling in shale at 12,078 feet. This well is the deepest active drilling well in the world.

Humble Oil & Refining Company's Nordyke 1, Ebenezer prospect, Section 23-10s-1e, Acadia Parish, proved disappointing after drilling to 10,056 feet. The hole was abandoned after drill stem stuck. Several sands showing oil were encountered, but they did not contain enough saturation for a production test.

To Drill North Crowley

North of Ebenezer prospect, which is sometimes referred to as South Crowley prospect, Humble Oil & Refining Company made location for Federal Land Bank 1, on the North Crowley prospect, Acadia Parish. North Crowley prospect is a geophysical prospect of Humble Oil & Refining Company, which worked the area with reflection seismograph and torsion balance in 1935. The operators have around 9000 acres in the area. Stanolind Oil & Gas Company, Shell Petroleum Corporation, Amerada Petroleum Corporation and Gulf Oil Corporation have worked in the general area with geophysical instruments. All geophysical work showed indications of a structure.

On the northeast side of Tepetate, Acadia Parish, Continental Oil Company completed Welsh 7-A, Section 28-7s-2w, flowing 170 barrels of 33 gravity pipe line oil daily through a 3/16-inch choke, with a tubing pressure of 850 pounds and a casing pressure of 1200 pounds from Marginulina-Frio sands at 8295 to 8309 feet. The company made location for Vincent & Welsh 1, 660 feet south of Ortego 1, Section 30-17s-2w.

Second Deepest Drilling Test

If the Texas Company's Horseshoe Bayou 1, Wax Lake prospect, Section 40-17s-9e, St. Mary Parish, reaches 12,000 feet it will be the fourth well in the Louisiana Gulf Coast to drill that deep. At the end of last week the wildcat was down below 11,800 feet, the second depest active test in the world. It has not been determined how deep the well will be drilled, but unconfirmed reports state that it will be drilled to 13,000 feet. If that depth is reached it will establish a new world's record for deep drilling. The deepest well in the world went to 12,786 feet.

The Texas Company has set 7⅝-inch casing in St. Martin Land Company 9, Henderson salt dome, Section 21-8s-7e, St. Martin Parish, at 8666 feet. The coming week the crew will perforate casing and make a production test of unannounced sands. St. Martin Land Company 9 was drilled to 8858 feet in salt after logging the top of the formation at 8848 feet. This wildcat is the first well at Henderson to encounter salt.

On the southeast side of Lafitte field, Jefferson Parish, The Texas Company was drilling at 10,135 feet in sand and shale showing oil in L. L. E. Lafitte 6, Section 29-17s-24e. Top of the broken formation was encountered around 10,055 feet. A sand showing oil was also encountered from 9999 to 10,048 feet. The well will be drilled deeper as an exploratory test.

Superior Oil Producing Company announced location for Gulf of Mexico 1, in the Gulf of Mexico, 3800 feet west and 6200 feet south of southeast corner of Section 4-15s-8w, Cameron Parish. This prospect is known as the Creole Block and has been worked by geophysical instruments by Pure Oil Company, The Texas Company, Stanolind Oil & Gas Company and Superior Oil Porducing Company. Pure Oil Company is a large lease holder in the area. Several other companies surrendered acreage in this area.

It is reported that Superior Oil Producing Company and Pure Oil Company have made a deal with Southern Sulphur Company to take over the latter's maritime leases along the Gulf of Mexico. The two operators are to complete Southern Sulphur Company's State Maritime 2, 15s-10w, Cameron Parish, which is shut down at 2611 feet. Furthermore, Superior and Pure are to select 50,000 acres from the block for further development. The deal also calls for drilling an additional well in the area.

Union Sulphur Company's J. O. Hebert 1, Big Lake area, Section 18-12s-8w, Cameron Parish, was drilling in salt water sand last week at 7580 feet. The well will be carried deeper and then probably plugged back to the sand around 6815 feet which showed fair indications on an electrical logging device.

Test English Bayou Outpost

Southeast of production at English Bayou, Fohs Oil Company is testing First National Bank 1, Section 13-9s-8w, at 7044 feet. An eight-minute drill stem test of sand from 7042 to 7044 feet showed 400 feet of pipe line oil, 180 feet of mud, and a good gas pressure through quarter-inch chokes. Five-inch casing was set on bottom and was perforated at the sands showing oil. Fohs Oil Company made location for Airhart 3, 550 feet south and 325 feet west of the NEc SW SE of Section 14-9s-8w.

On the north side of Gillis field, one mile north of English Bayou, Calcasieu Parish, Union Sulphur Company was swabbing Barbe Estate 14, Section 1-9s-8w, at 6730 feet. Sand showing oil was logged from 6726 to 6730 feet. Seven-inch casing was set at 6725 feet.

Woodley Petroleum Company has made location at Vinton field for a flank test. Matilda Grey 1 is 211 feet north and 1180 feet west of the southeast corner of Section 32-10s-12, Calcasieu Parish. Adams-Louisiana Company took a block of 2500 acres in this area some time ago and worked the block with reflection seismograph.

On the South Roanoke prospect, Jefferson Davis Parish, Shell Petroleum Corporation's Sturdevant 1, Section 25-10s-4w, waiting on cement at 8450 feet at the end of the week will perforate casing again for another test. During the past week the casing was perforated with 56 holes from 8486 to 8506 feet and a drill stem test through quarter-inch chokes showed 20 stands of salt water and a 160-pound pressure. The hole was plugged back to 8480 feet and casing was perforated with 30 holes from 8460 to 8475 feet. Salt water and distillate were recovered. A cement retainer will be set at 8560 feet.

SOUTH LOUISIANA Completions

Company, Well and Location	Init. Prod Bbls.	Depth
CAILLOU ISLAND—		
Texas Co., State 47	215	4392
GILLIS—		
Texas Co., Nickerson Fee 12	960	6718
JENNINGS—		
T. G. Markey, Gourney A-1	*	5049
Superior, Leckelt 2 (dr to 8329, pb and perf 5780-90 ft)	148	8329
TEPETATE—		
Continental, Welsh 7-A	167	8309
ACADIA PARISH—		
Humble, Nordyke 1, Ebenezer prospect, sec 23-10s-1e	*	10,056

*Failures; †Junked; ¶Million cu. ft. gas.

Wildcat 14 miles southwest of Rodessa productive.

* * *

Lisbon field likely to be extended 1½ miles.

* * *

Oil showing reported in Shelby County wildcat.

Shreveport. — Texas Railroad Commission's first potential production test of Holcomb, Thomasson and associates' Lizzie Henderson 1, R. Bennington Survey, Marion County, Texas, 14 miles southwest of Rodessa production was completed last week when a 24-hour test showed the well made 96 barrels of oil through 2 1/16-inch tubing chokes. Plugged back depth is 5996 feet; old total depth, 6405 feet. Gas with the oil was 122,000 cubic feet daily and the gas-oil ratio was placed at 1025 to 1.

Glen Rose Possibilities Dampened

Meanwhile, immediate hope of getting basal Glen Rose production in Rodessa was given a set-back when United Gas Public Service Company's I. L. Young 5, NW NW 27-23n-16w, in a drill stem test showed 15 joints of mud and water in 16 minutes at 6524 feet, with ½-inch chokes on top and bottom. The same company was coring ahead below 6790 feet in J. W. Land 1, Robert Potter Survey, Cass County, Texas, after a sixth attempt at a drill stem test failed.

Perkins and Marr were setting casing in Hunter 5, Section 13-23n-16w, with plans to perforate at 6513 to 6528 feet, where a saturated formation was reported while the test was being deepened from the Young horizon. An electrical tester was run. Apparently the Travis Peak showed nothing as the showing reported at 6513 to 6528 feet is now identified as basal Glen Rose.

R. W. Norton's Payne 1, SE SE 27-23n-16w, a 10,000-foot project, continued to core below 9321 feet. Magnolia Petroleum Company is drilling below the Young horizon in Harper and Thatcher 1, Jacob Carsner Survey, which is below 6562 feet. Arkansas-Louisiana Gas Company's Laura McIntosh 1, William Edmonson Survey, Marion County, is being deepened and is coring for the Young horizon below 6100 feet, after showing water in the Dees horizon.

Rodessa Southeast Extension Likely

A one-half mile southeast extension of the northeast limits of Rodessa appeared likely last week as Lion Oil Refining Company's Holm 1, NW SE SE 9-23n-15w, cored 10 feet of Young formation showing oil saturation and was preparing to set final string of casing. Depth is 6042 feet. This well, if productive, will cause a revision of theories as to the Young's productivity in that end of the field.

The northwest offshoot of Rodessa on the Louisiana side, also came in for attention as three tests in that area set final strings of casing. They are: J. Edward Jones' Madie Sharpe A-4, Section 4-23n-16w, total depth 5960 feet; Maidie Sharpe B-2, same section, total depth 6070 feet; and Gulf Oil Corporation's Campbell 1, same section, total depth 6050 feet.

Standard Oil Company of Louisiana's Terry 1, NE SW Section 9-23n-16w, was completed at 5975 feet flowing 428 barrels in 24 hours through 15/64-inch tubing choke with casing pressure of 1225 pounds. Standard has staked location for Armistead 3, SW SE 4-23n-16w, offsetting a producer. In the same section Holcomb and Thomasson took a 34-acre lease from A. R. Hardin that requires an immediate test, and in Section 8-23n-16w Fred Upchurch assigned the north 29.39 acres in south half NE of the section to Surf Oil Company, this carrying an immediate drilling obligation.

Lisbon Outpost Looks Good

A half mile east extension of Lisbon field, Claiborne Parish, appeared likely last week as L. O. McMillan and De Armand's Maggie Patton 1, NE SW 31-21n-4w, cored saturated formation from basal Glen Rose at 5292 feet, and prepared to set final string of casing.

Next deepest of the 20 drilling operations at Rodessa due to reach the producing horizon is Love Petroleum Company's H. E. Patton 1, Section 36-21n-5w, which is coring below 5100 feet for saturation.

Louisiana State Conservation Commission authorities Thursday released permits for ten operations that were ready to spud or had spudded and set 9⅝-inch casing. Those not already spudded of these practically all spudded as soon as permits were received.

Magnolia Petroleum Company made

a new location east of production last week in Burgess 1, Section 8-20n-4w.

Wildcat to Set Casing

H. A. Stebbinger and associates' Pickering Lumber Company 1, A. Hanson Survey, Shelby County, Texas, near Joaquin, was awaiting arrival of 5-3/16-inch casing last week at 5099 feet. It was reported that 28 feet of formation, part of which showed oil saturation, was encountered at bottom of the hole. Operators planned to set to bottom and perforate. Recently they reported 20 feet of gas-distillate saturation at 5025 to 5045 feet, and seven-inch casing was cemented at 4792 feet; elevation is 205 feet.

R. W. Perkins of California has assembled a 6000 acre block for a proposed 6000 foot test near Karnack, Harrison County, Texas, around the R. O. Watkins and nearby surveys. In the southwest part of the same county W. W. Bradley is planning a test on the Bivins land, William Pettus Survey.

Seaboard Oil Corporation has leased over 1800 acres around Rosborough Springs, Harrison County, in the Hudson Hall, Charles Taylor and adjacent surveys.

Sugar Creek Flank Producer

United Gas Public Service Company's Warren Brown 1, SE NE 1-19n-6w, on the northwest flank of the Sugar Creek gas-distillate field, Claiborne Parish, gauged 205 barrels of oil in 24 hours from 5745 feet, with casing pressure 1400 pounds. Elevation is 316 feet. Later the well dropped to 86 barrels in 24 hours and then to 59 barrels in the same length of time.

The sixth oil producer for Sligo field, Bossier Parish, was added last week in United Gas Public Service Company's Skannal I-1, SW SW 25-17n-12w, which flowed 209 barrels in 12 hours through ¼-inch choke with casing pressure 1275 pounds and tubing pressure 550 pounds. Depth is 5175 feet in Petitt sand (basal Glen Rose).

On the northeast edge of Cotton Valley field, Webster Parish, H. L. Hunt leased 520 acres in Sections 12, 13, 24 and 30-21n-10w, around Township 23 north, Ranges 2 and 3 west, Union Parish. Sun Oil Company has recently leased 2000 acres. In the same parish, Magnolia Petroleum Company is adding to its holdings in Township 21 north, Range 1 west.

Around Section 29-19n-9w, Webster Parish, American Liberty Oil Company has been taking considerable acreage.

Buying Rodessa Oil

Shreveport. — Stanolind Oil & Gas Company has contracted to buy 10,000 barrels of Rodessa oil during April from La-Tex Pipe Line Company for delivery to the former's plant at Superior, Caddo Parish, through Arkansas Pipe Line Company's 6-inch line.

American Liberty Oil Company has contracted to sell Gulf Oil Corporation 60,000 barrels of Rodessa crude from its Rambo lease in Cass County, Texas, to be delivered at the rate of 5000 barrels daily.

The Texas Pipe Line Company has just installed a new 90-horsepower engine and a gasoline pump at Rodessa, required to handle the increased runs of Southern Liberty Pipe Line Company.

United Gas Public Service Company's Rodessa pipe line is said to be operating at its full capacity with the company still having many wells yet to drill.

Rodessa Pressure Decline

Shreveport. — Bottom-hole pressure on the Louisiana side of Rodessa declined 42 pounds during the 31-day period immediately before April 1, 1937, an average decline of 1.35 pounds per day, according to figures compiled by the engineers of the Rodessa Operators Committee. The average bottom hole pressure for the Louisiana side of the field on April 1 was 1822 pounds.

The following tabulation of weighted averages shows the drop in bottom-hole pressures since July, 1936:

Date	Average pressure	Loss in lbs.	Days	Daily loss in lbs.
July 7	2314	...	..	...
August 27	2162	152	51	2.98
September 27	2080	82	31	2.64
October 27	2009	71	30	2.37
November 27	1950	59	31	1.90
January 1	1886	66	35	1.83
February 1	1874	12	31	0.39
March 1	1864	10	28	0.36
April 1	1822	42	31	1.35

One reason for the increase in the reduction in bottom hole pressures after the reduction had been halted in its drop for several previous months was the fact that all the key wells being used in the Hill horizon for measurement were discarded during March and only wells in the Gloyd, Dees and Young were measured.

Pumping and Salt Water Data

Ten wells on the Louisiana side on April 1 were on the beam and 10 others were on gas lift. A total of 85 acid treatments have been given wells on the Louisiana side of Rodessa, although not quite that many wells have been treated as 6 wells have been treated twice and 2 have been treated 3 times with acid.

A tabulation to April 15 shows that there are 87 wells on the Louisiana side of the field making salt water in amounts up to 90 percent and 2 of these are listed on the report as dead. There are 18 on the Cass County, Texas, side making salt water, only one of them, which is listed as 90 percent water, exceeding 20 percent.

Shreveport.—Glassell & Glassell of Shreveport last week staked location for a 6,000-foot wildcat test, in Lincoln Parish, A. P. Gray 1, SE SW 16-20n-3w, and are moving in materials. This location is on a block of 12,000 acres in which practically all of the major companies operating in North Louisiana have spreads, sufficient acreage having been sold from the block to finance the test.

Shell Petroleum Corporation among those taking spreads took 1,000 acres and supplemented this with acquiring additional acreage around the edges of the block.

Another test which is planned to the Glen Rose, will be drilled on the south edge of the old Bull Bayou field by Lee Whitehurst who has about 4,000 acres centering around Section 25-12n-11w, Red River Parish, a lease on the Le Long tract in that section requiring that he spud by June 10. The Texas Company has been adding considerable acreage recently in Township 11 north, Range 11 west, southwest of Bull Bayou and in the direction of Fite & Grogan's Ramsey 1, Section 36-11n-11w, which recently blew out making oil after having been abandoned at 3027 feet. Operators were going into this hole last week to make an electrical test to determine source of the oil which is said to resemble Bull Bayou production.

Southeast of this test, G. H. Collins and others have been leasing in townships 9 and 10 north, range 10 west, Natchitoches Parish, and farther east Roy A. Raines of Marthaville has spudded to 280 feet and cemented 70 feet of 12½-inch surface casing in Allen Plantation 1, located 322 feet east and 82 feet south of NWc NE SW 22-10n-9w, Natchitoches Parish, on a 4,000-acre block. Cloverleaf Oil Company (Hoosier Oil Company) drilled 2 tests below 3300 feet in Section 27-10n-9w, many years ago, the first located in C NE NW 27-10n-9w, going to 3303 feet, was drilled in April, 1912.

H. D. Easton, as trustee for an eastern company, continues to add to a block of acreage around Section 21-19n-4w, Lincoln Parish, 8 miles southeast of the Lisbon field, having last week assembled over 9,000 acres. A 6,000-foot test must be started by June 10. This block is practically in the center of a pentagon bounded on the northwest by Lisbon, on the west by Sugar Creek gas field, on the south by the Simsboro gas field, Section 10-17n-4w, Lincoln Parish, and by locations for 6000-foot wildcats on the southeast and northeast, Oakes, Easton and Evans' R. L. Sanderson 1, NW NW 30-18n-1w, and Glassell & Glassel's A. P. Gray 1, SE SW 16-20n-3w, respectively.

It is evident from the activity following the Lisbon discovery, the finding of oil on the northwest flank of the Sugar Creek gas field, and the Shuler oil well discovery in Section 18-18n-17w, that the North Louisiana Basin will get the

NORTH LOUISIANA

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CADDO PARISH (Rodessa)—		
Magnolia Pet. Co., Caddo Levee Bd. 11 (Norton), 21-23n-16w	460	5980
Standard Oil Co. of La., Terry 1, 9-23n-16w	428	5975
CADDO PARISH (Hosston)—		
Bayou State Oil Corp., Stiles 1, 22-22n-15w	15	1012
CADDO PARISH (Pine Island)—		
W. D. Chew, Rives 3, 5-20n-16w	35	946
CADDO PARISH (Robson)—		
Robson Oil Properties Inc (Fallon Oil Co.), Cupples 1, 24-16n-13w	*	5675
CLAIBORNE PARISH (Sugar Creek)—		
United Gas P. S. Co. et al, Warren Brown 1, 1-19n-6w	205	5745
DE SOTO PARISH (Kickapoo)—		
Sundby et al (formerly Carlson et al), Garland 1, 7-14n-14w	*	5583
UNION PARISH (Monroe)—		
Interstate Nat. Gas Co., Fee 63, 3-21n-3e	¶1½	2159
WEBSTER PARISH (Sibley)—		
Standard of La., Fudicker 1, 2-17n-9w	¶13	7002

*Failures; †Junked; ¶Million cu. ft. gas.

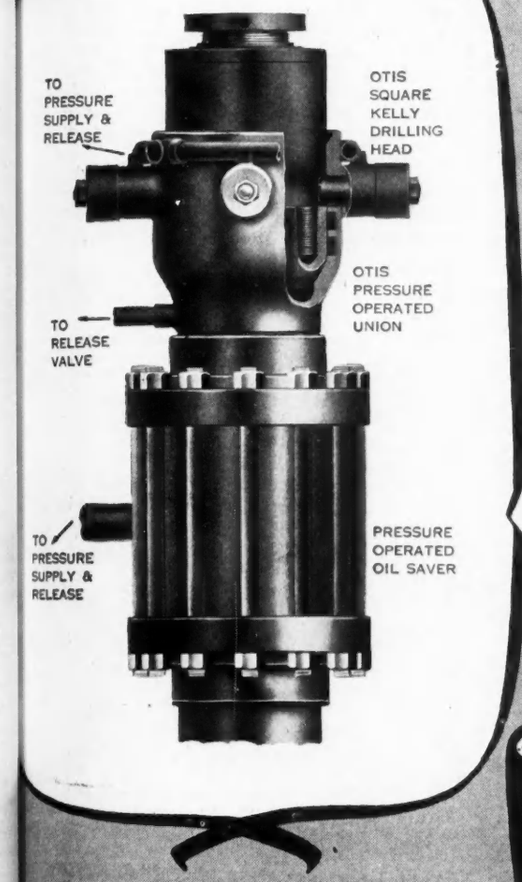
conventional rotary equipment was not the best method to use in completing these deep Wilcox sand producers the operators turned to the pressure control method of well completion and practically every well in this zone has been completed by this method since last summer

Capitol Building. This well was completed by the pressure control method of drilling-in because the bottom-hole pressure in the Wilcox sand is about 500 pounds and if mud laden fluid had been used while drilling into the pay formation it is probable the well would have been nonproductive. When the original wells were drilled in the Oklahoma City field the formation pressure was about 2,660 pounds.

While the cement was hardening the Otis square Kelly drilling head pressure control outfit was rigged up at the well. The regular drilling head was removed and in its place a 5,000-pound

a blowout preventer was placed. Then comes a short section of 9⅝-inch casing and a high pressure oil saver and immediately above the oil saver the Otis square Kelly packer is installed.

...ed iron.
The next group of wells to be completed in this ...tension to the Wilcox zone will be handled with ...e Otis pressure control method and five of them ...re being drilled in this week and with their com...letion much will be learned of this Wilcox sa...


TO PRESSURE SUPPLY & RELEASE
OTIS SQUARE KELLY DRILLING HEAD
OTIS PRESSURE OPERATED UNION
TO RELEASE VALVE
TO PRESSURE SUPPLY & RELEASE
PRESSURE OPERATED OIL SAVER

With formation pressures in the Wilcox sand zone in Oklahoma City relatively low it has been found advantageous to complete new wells using the pressure control method of drilling. By this method relatively little pressure is placed upon the producing formation by the drilling fluid and better wells are secured.

So successful has been the Otis pressure control method of drilling that it has long since won the wide acclaim of the field. It's done more than that: It has received, without any mincing of words, the recognition of leading international oil industry magazines in their editorial columns. A few such comments, clipped at random, are reproduced here.

Making its first real strides in the Oklahoma City field, this method, embodying principally the Otis Square Kelly Drilling Head and Otis Pressure Operated Union, has definitely proven of revolutionary value wherever bottom hole pressure has declined below the hydrostatic pressure exerted by the weight of a heavy mud laden fluid column.

GIVING CREDIT WHERE CREDIT IS DUE

...as the industry is turning to the Otis ...sure control method of drilling where ...itions make it necessary, the industry is ...ng for Otis Snubbing Service where the ...ing and pulling of tubing or drill pipe ...r pressure is necessary.

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PRESSURE CONTROL - OTIS - SERVICE - EQUIPMENT TRADE-MARK

major part of the oil exploration in North Louisiana for the next few months.

Lisbon and Schuler, aside from the half-a-dozen oil wells in the Sligo field, Bossier Parish, and a similar number in Cotton Valley's deeper horizons, are the only oil discoveries in North Louisiana or Arkansas, since Rodessa's first oil well was completed in July, 1935. Of gas and distillate discoveries there have been several, including Simsboro, and the Bienville Parish field of Lide & Greer, but there has been a scarcity of oil in this territory.

Louisiana Permits

Shreveport. — Twenty drilling permits were authorized last week by the minerals division, Louisiana Conservation Commission of which nine were for North Louisiana divided among the following parishes: Caddo, 3; DeSoto, 1; Grant, 1; LaSalle, 1; Red River, 1; and Webster, 2, both in Cotton Valley. Those in South Louisiana were divided among the following parishes: Acadia, 4; Calcasieu, 1; Cameron, 3; East Baton Rouge, 1; St. Landry, 1; and Terrebonne, 1.

Want 10-Acre Spacing

Austin.—Yates sand operators have unanimously requested the railroad commission to provide 10-acre spacing for the field. This request was made at the statewide hearing last week. The operators also asked the commission to designate this field as the Smith horizon of the Yates field to distinguish it from the deeper production in Yates.

The remaining producers in Yates field offered no objection to the spacing program when they were assured by the commission and by the operators producing from the Yates sand that adequate protection would be given to surface water sands upon which the area depends for its domestic water supply.

COMPACT EXTENDED

Texas legislators vote for two-year extension

Austin.—The Texas Senate has passed and sent to the governor without amendment the House bill extending for 2 years the Interstate Oil Compact.

Weaver Moore of Houston attempted to include in the bill an amendment which would allow Texas to withdraw from the compact if it does not get a fair share of the allowable for the entire United States. This amendment was defeated when Senator Morris Roberts informed the Senate that the Compact Commission does not fix allowables for any state.

CHESTER M. GARDINER, petroleum geologist and valuation engineer, has moved his offices to Suite 505, 811 West Seventh Street Bldg., Los Angeles.

Strangers

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SHREVEPORT, LOUISIANA

PELCO

Lake Charles—Houma—Converse
New Iberia—Rodessa—Monroe—Cotton Valley—Turnertown—Greggton—Houston

ARKANSAS FIELDS

Schuler producer attracts two offset locations.

* * *

Much leasing activity along Louisiana line.

El Dorado, Ark.—Lion Oil Refining Company is rigging for Edna Morgan B-1, NW SE 18-18-17, southeast offset to the recently completed Edna Morgan 1, in the same section. The latter well is credited with opening a new oil field for Union County, near Schuler, making an average of 200 barrels daily on a recent test from 5559 feet. A previously announced offset, also in process of rigging, is Marine Oil Company's Justiss 1 in the same section. The producing well is on a 15,000-acre block which Lion Oil Refining Company took over from Phillips Petroleum Company after the latter had drilled the discovery well to 4270 feet. The deal leaves Phillips Petroleum Company with an interest.

Leasing activity continues at a high pitch in South Arkansas and along the Louisiana line, especially southeast parallel with a fault that extends southeast along the west side of the Monroe Uplift, and south and southwest toward the new Lisbon field, Claiborne Parish, Louisiana.

Hunt Oil Company has bought acreage since the Schuler discovery well was completed, in Sections 5, 6, 7, 8, 10, 19 and 29-18-17. J. H. Dugan of El Dorado has been buying in the vicinity of the well in Section 27-18-17 and in the same county Mid-Continent Petroleum Company leased 400 acres in township 19, range 17, and Sun Oil Company has been leasing in the same township and range.

Phillips Petroleum Company has taken a geophysical option on approximately 150,000 acres of Frost Industries acreage in Union County, Arkansas, and Union Parish, Louisiana, from Joe Modisette and associates who had a geophysical option on approximately 250,000 acres of the Frost holdings. Phillips has three shooting units working on this acreage, two in Louisiana and one in Arkansas.

West of the Schuler producer and around McNeil, Columbia County, in

ARKANSAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
HEMPSTEAD COUNTY—		
Root Pet. Co. & O'Brien Bros., Drake 1, 24-14-24	*	4507
GRANT COUNTY—		
Wallace & Staples, W. F. Davis 2, 23-6-15	†	2382
NEVADA COUNTY (Troy)—		
Berry Asphalt Co., W. Haynie 2, 6-14-20	60	1193
Bruce E. Wallace, Wm. Haynie 1, 6-14-20	40	1183
Benedum & Trees Oil Co., Grove 7, 10-14-20	¶20	1240

*Failures; †Junked; ¶Million cu. ft. gas.

townships 18 and 19, ranges 18 and 19, Hunt Oil Company has secured approximately 4000 acres and Magnolia Petroleum Company approximately 2000 acres. Standard Oil Company of Louisiana has acquired a block in township 16, range 22, Columbia County, from Harper and associates, who also assigned about 2500 acres in township 16, range 21, to Magnolia Petroleum Company.

In the same county, Standard Oil Company of Louisiana has a block around Section 21-18-21, and Superior Oil Company has a 4000-acre block in townships 17 and 18, ranges 21, 22 and 23. Tisdale and associates are leasing in this general area.

El Dorado, Ark.—Four drilling permits were authorized last week by the Arkansas Board of Conservation as follows: Ouachita County—H. H. Taylor, Tulsa, Oklahoma, Joe McCree 1, C NW SW NW 21-13-19; Pulaski County—Alva L. Kitselman, Muncie, Indiana, A. L. Kitselman 2, SE SW 2-1s-13w; Union County—Lion Oil Refining Company, Edna Morgan B-1, NW SE 18-18-17; McCreslenn Oil Company, El Dorado, Arkansas, Atkins 5, SW NE 3-18-13.

H. C. Detrick was authorized to receive by transfer the permit issued for S. L. Robbins 1, SW NE 12-19-16, Union County, recently taken out by Travis & Bull.

SOUTHEASTERN STATES

Mississippi test plugs back from salt water.

* * *

Geophysical work continues in southern sector.

Jackson, Miss.—State of Mississippi's Fee 2, NWc NW 25-6n-1e, Hinds County, Jackson gas field, which was plugged back from old total depth of 5529 feet, last week tested salt water at 2842 to 2855 feet, and will be farther plugged back to the Jackson chalk gas horizon around 2400 feet; elevation is 326.5 feet.

Gordon S. Bowdish is leasing in Jackson County, southeast Mississippi Gulf Coast County. California Company has moved its geophysical unit that has been working in Copiah and Lincoln counties to Rankin County, where it is working in township 4 north, range 1 east, east of the Jackson gas field. Southern Natural Gas Company has a geophysical unit working in southern Hinds County, after working for some time near Edwards in the central part of the county.

Sun Oil Company, which is now drilling its third test on a block in Lamar County, Mississippi, has moved in a gravimeter unit to check the salt dome area recently found there. This company also has two other units doing reflection and refraction shooting in the same county.

Phillips Petroleum Company which is working on a 250,000-acre block recently taken under geophysical option in southeast Mississippi, now has its unit working in Perry County. Sun Oil Company recently transferred a geophysical party from Copiah to Forest County. Gulf Oil Corporation has one geophysical party working in Marion County, and another in Forest County.

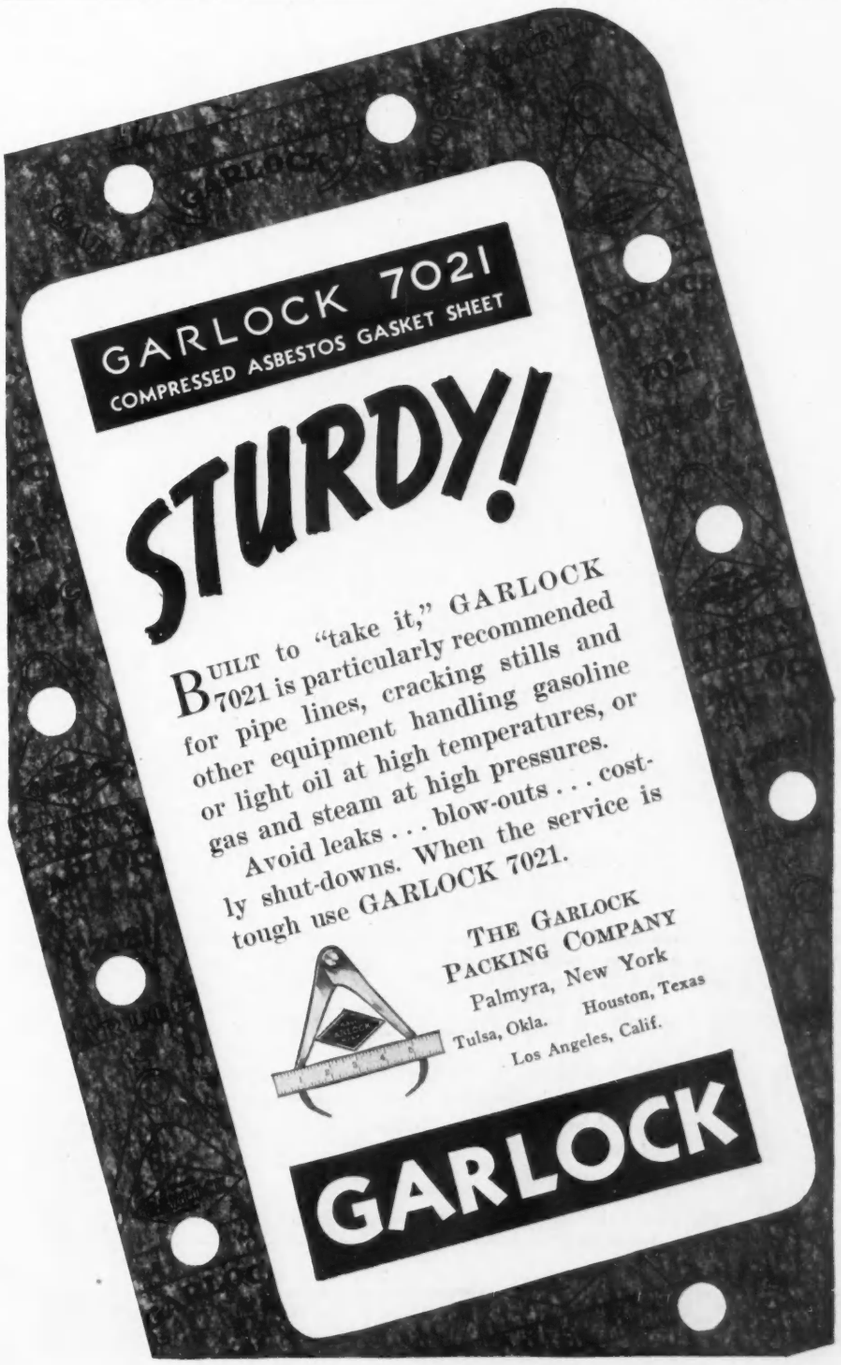
Abandon Mississippi Wildcat

Hattiesburg.—Sun Oil Company and Wanette Oil Company's K. Talley 2, NW NE NW 33-4n-15w, third test for the Scanlan piercement-type of salt dome, situated about 16 miles west of Hattiesburg and in Mississippi, is credited with logging hard caprock formation in drilling in lime and calcite at 2690 feet. Top of Wilcox was encountered at 2147 feet, and first Midway at 2508 feet, with an elevation of 402 feet. It is due to be abandoned, and rig skidded to continue the search for flank production.

To Shoot Alabama Tract

Mobile, Ala.—Fred E. West is reported to have acquired a geophysical option on 45,000 acres of land recently taken under exploration option in townships 6 and 7 south, range 2 east, Baldwin County, Alabama, by Theodore H. Bartu. West plans immediate shooting of the acreage. Under his option he can select such acreage as desired under 10-year lease for a 6000-foot test.

United Gas Public Service Company still has a seismograph unit working out of Mobile.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NEW MEXICO

Spectacular Monument fire extinguished with nitro.

* * *

19 new operations cause comeback in Lea County.

* * *

Part of gap between leading fields closed by well.

Hobbs.—Rated as the most spectacular fire in the history of New Mexico's oil development, Continental Oil Company's State 1-C-16, C SW NW 16-20s-37e, an inside location in the southeast portion of the Monument field, was extinguished by a third blast of nitro about daylight April 23. The professional fire fighting crews succeeded with 150 quarts of explosives, and immediately centered their efforts on capping the well.

Three workmen were killed and seven burned when the well broke loose while snubbing in drill pipe at 3809 feet on the morning of April 15. Fire caused by friction, or a metallic spark, melted the steel derrick within five minutes after the first blast, according to witnesses. The well has been out of control for a week, and is estimated to be producing about 300 barrels of oil per hour and 75,000,000 feet of gas daily. All of the production is being consumed by the fire. The flow line on the control head was shot off early last week.

George C. Barlow, 23, and Worth L. Barrett, 29, died soon after reaching a hospital. Otis J. Hood, 24, was killed on the derrick floor, and his body destroyed by the fire. These men were employed by Otis Pressure Control, Incorporated. W. L. Robinson, driller for Mitchell & Sullivan, Fort Worth contractor, was among those requiring hospital attention.

McKinley Brothers Called

McKinley Brothers, Oklahoma fire fighters, were engaged to place the well under control. Debris and heavy machinery was pulled from site before the first shot of nitro was exploded over the well to gap the flames. A second shot of 100 quarts was used April 22 with negative results.

Prolific oil and gas areas in Lea County are respected by field men for their hazards, and remarkably few serious accidents and fires have occurred from the frequent air and gas blowouts.

Lea County scored a comeback on new field work the past week in recording 19 new operations, including 12 equally divided between the Monument and Eunice fields. The remainder were distributed through the sandy-lime belt in the east portion of the county.

130 Barrels in 30 Minutes

Ennishope Oil Corporation's State-Wulff 2, SE SW NW 17-20s-37e, Monument area, topped the list of new completions with an initial yield of 130 barrels oil in 30 minutes through three-inch line on casing from lime at 3860 feet. On one-inch tubing choke the well flowed 97 barrels the first hour and 103 barrels the second hour.

Amerada Petroleum Corporation boosted its total producers in the field to 84 by completing three flowing wells the past week, including W. P. Byrd 1-A, C NE SW 12-20s-36e, with a natural flow of 812 barrels oil in 9 2/3 hours through one-inch choke at 3880 feet. The company has started operations on State 4-D, C NE NE 1-20s-36e, and Continental Oil Company has started operations on State 4-A-17, C NE SW 17-19s-37e, northeast outpost location, and also on State-W. D. Burger 1, C NW SW 19-20s-38e. The latter is an east offset to a producer in the sandy-lime section to the east of the Monument field, but for proration purposes is listed as part of the Monument field.

Skelly Oil Company authorized locations for Van Etten 5, C NW SE 9-20s-37e, and Van Etten 6, C SW SE 9-20s-37e. Empire Oil & Refining Company's Amos Pearson 1, C SE SE 27-19s-36e, is a northwest outpost location. Harry W. Leonard et al's Alice Siddall 1, C SW SW 6-20s-38e, is a new operation on a wildcat site about 3½ miles east of Monument and 2¾ miles north of nearest production in the sandy-lime trend. trend.

Gap Is Narrowing

Phillips Petroleum Company's State-Mex 1, C NE NE 30-20s-37e, advanced production in the north end of the Eunice lime field one location nearer Monument field, with a small spray of oil and 5,000,000 feet of gas at 3843 feet. Production was killed to install packer on tubing. Tide Water Associated Oil Company's R. M. Marshall 1, C SW NE 13-21s-36e, about ¾ mile east of nearest production, flowed about 25 barrels daily after 240-quart shot at 3770-3875 feet, and may be acidized. It has an elevation of 3555 feet.

Gulf Oil Corporation has started operations on State-Orcutt 8-C, Lot 2, 6-21s-36e, and H. C. Collins 5, C SE SW 14-21s-36e. Empire Oil & Refining Company also accounted for two new tests for the area, having derrick up for State 1-G, C SW SW 2-21s-36e, and Closson 3, SW SW NE 6-22s-36e.

Atlantic Refining Company's State 1-0, C SW NW 32-20s-37e, and Shell-Devonian Oil Company's Christmas 2,

NEW MEXICO

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
LEA COUNTY (Eunice Field)—		
Atlantic Ref. Co., State-Catron 5-L, lot 4, 3-21s-36e	90	3845
Shell Pet. Corp., State 2-H, c w½ ne ne 13-21s-35e	500	3925
LEA COUNTY (Hardy-North Eunice Field)—		
J. C. Clower et al, W. H. Turner 2, sw sw se 29-21s-37e	75	3754
Gulf Oil Corp., H. T. Mattern 1-B, ne ne se 30-21s-37e	225	3813
LEA COUNTY (Penrose-South Eunice Field)—		
Tide Water Associated, Ann Walden 2, c sw ne 21-22s-37e	190	3610
The Texas Co., C. P. Falby 1, c ne nw 8-22s-37e	104	3750
LEA COUNTY (Langlie-East Jal Field)—		
Sun Oil Co., I. R. Stuart 2, c sw ne 15-25s-37e	250	3383
LEA COUNTY (Monument Field)—		
Amerada Pet. Corp., W. P. Byrd 1-A, c ne sw 12-20s-36e	2500	3880
J. R. Phillips 4, c nw ne 1-20s-36e	2500	3900
State 3-F, c ne sw 36-19s-36e	1500	3905
Ennishope Oil Corp. (E. Boeseke), State-Wulff 2, se sw nw 17-20s-37e	6000	3860
Gulf Oil Corp., T. Anderson 5, c se nw 17-20s-37e	3000	3865

*Failures; †Junked; ¶Million cu. ft. gas.

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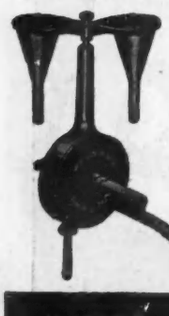

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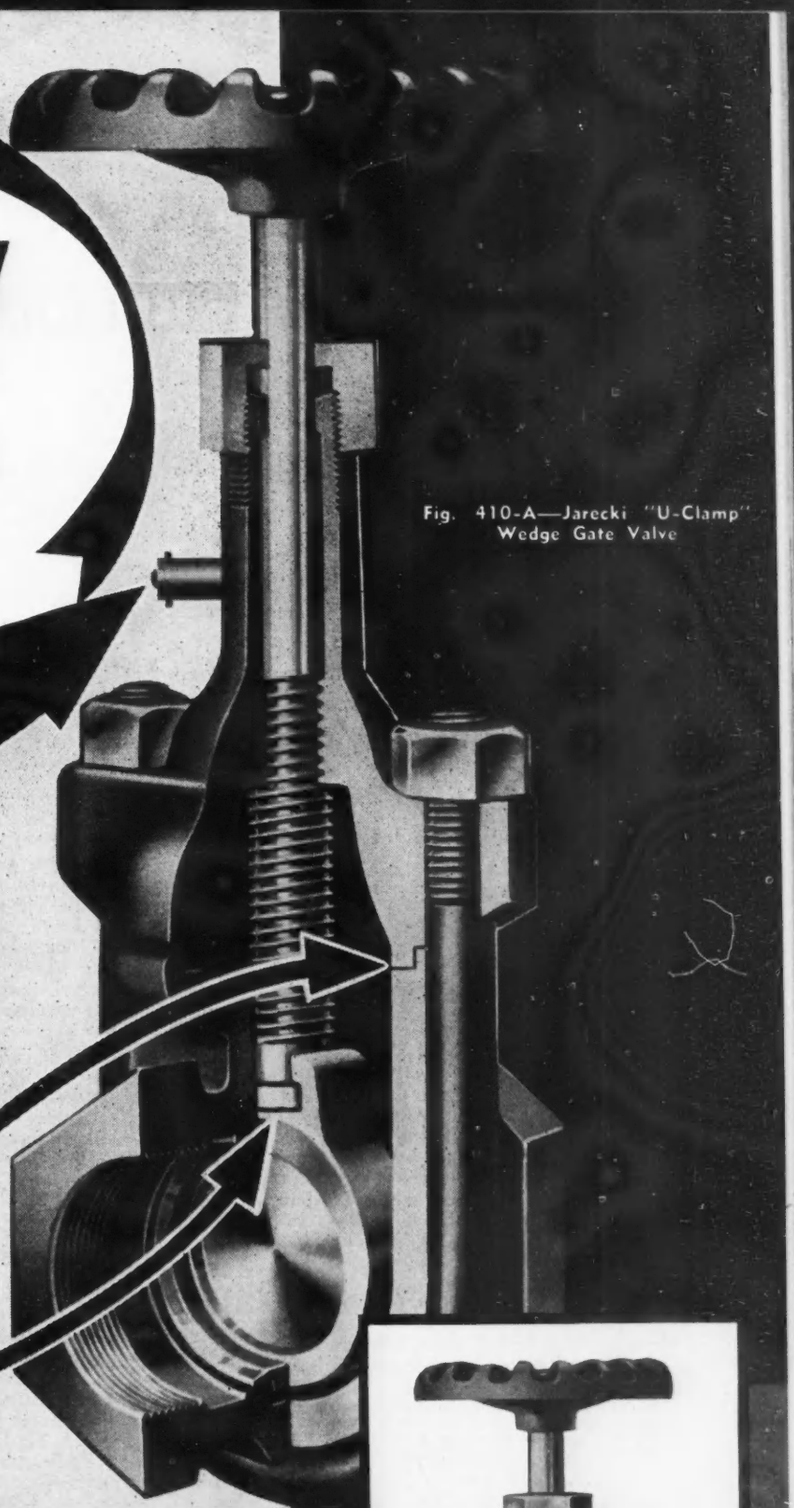


Fig. 410-A—Jarecki "U-Clamp" Wedge Gate Valve

JARECKI now offers the oil industry a *small* valve—in ½" to 3" sizes—with grease lubrication. This is an improved feature of our "U-Clamp" Iron Body Wedge Gate Valves which are widely used by the oil industry. Lubricant is applied through an Alemite fitting and gives these advantages: Keeps stem threads from sticking; prevents corrosion of stem and threads; makes packing last longer; prolongs life of valve and insures tightness.

JARECKI "U-Clamp" Valves also offer these valuable mechanical features:

1. Recessed circular joint between bonnet and body with lead gasket, provides a leak-proof joint and prevents packing from creeping or blowing out.

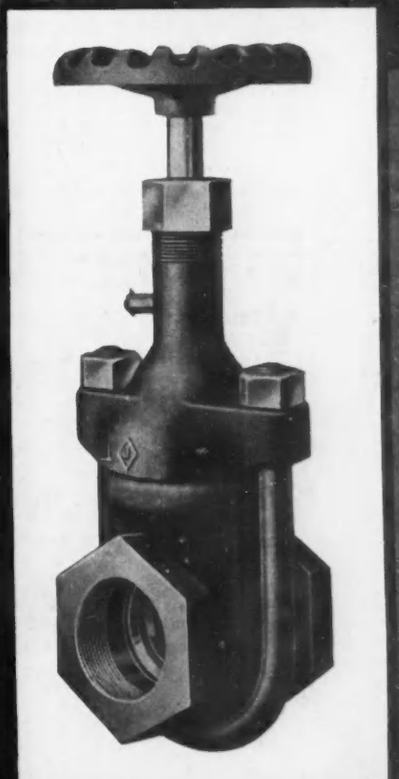
2. Wedge-guides in body prevent rattling of wedge and insure positive closing regardless of position of valve.

3. "U" Saddle bonnet attachment equalizes pressure on bonnet gasket and facilitates taking apart or reassembling valve.

Steam Working Pressures: 150 pounds for ½"-2"; 125 pounds for 2½"-3". Oil, Water or Gas Non-Shock Working Pressures: 225 pounds for ½"-2"; 175 pounds for 2½"-3".

We invite you to see the JARECKI lubricated "U-Clamp" Gate Valves at our nearest oil country store.

See JARECKI Section, 1937 Composite Catalog



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C NW NE 21-22s-36e, are on opposite ends of the area.

The Texas Company's C. P. Falby 1, C NE NW 8-22s-37e, offsetting production in the Penrose, or South Eunice sandy-lime area, flowed 104 barrels oil initial, with gas/oil ratio of 2530/1, after using 3000 gallons of acid at 3750 feet. Empire Oil & Refining Company's Walden 2, C NE NW 21-22s-37e, and Gulf Oil Corporation's State-R. E. Cole 1, C SE SE 16-22s-37e, are starting up to take care of offsets.

In the Skelly area, Skelly Oil Company made location for R. R. Sims 5, C NW SW 3-23s-37e, and H. O. Sims 2, C SE NE 4-23s-37e.

Cleanout work was still in progress late last week on The Texas Company and Ajax Drilling Company's J. P. Alexander 1, lot 14, 5-21s-37e, semi-wildcat for the sandy-lime area, after a 160-quart nitro shot at 3704-55 feet. Hole was cleaned out to within 15 feet of bottom, and the well swabbed 40 barrels oil in two hours. In the Langlie, or East Jal field, Sun Oil Company's I. R. Stuart 2, C SW NE 15-25s-37e, flowed 127 barrels oil via casing in 12 hours after a 200-quart shot at 3300-3383 feet. Gulf Oil Corporation has made location for Knight 1, C NW NW 27-24s-37e. Continental Oil Company et al have authorized the drilling of Eaves 2-A-30, C NE NW 30-26s-37e.

Peak Values

[Continued from page 78]

Texwell Oil Corporation, Pampa, has sold its I. B. Hughey-Gulf 79½-acre lease in SE Section 129, Block 3, I. & G. N. Ry. Survey, Gray County, with two completed wells for $45,000 cash and $30,000 payable from production. Purchase was contingent upon Hughey-Gulf 2 producing in excess of 700 barrels oil the first 48 hours and 200 barrels the third day. The well was shot with 420 quarts nitro in lime at 3160-3256 feet, with an elevation of 3254 feet, and flowed 61 barrels oil the first hour after running swab. It later swabbed 30 barrels hourly to qualify for the deal by a wide margin. Gulf Oil Corporation originally assigned this lease in October, 1932, to C. N. Ochiltree et al for a $3975 oil payment and a test. Ochiltree et al sold the lease and one well last January to Texwell Oil Corporation for $15,000 cash and an oil payment.

Shamrock Oil & Gas Company, Amarillo, has increased its large gas holdings in Moore County through the purchase of a lease on 18,000 acres from J. T. Sneed, Jr., et al for a cash bonus of $2.50 per acre, and $15 per acre payable from 1/6 of the production. Purchaser also assumed obligation to complete 20 wells within 4 years. The property is virtually proved for sweet gas production in the lime zone, and the wells currently will average about 400 pounds rock pressure.

Panhandle Stocks Reduced

Pampa, Texas.—Withdrawal of crude from steel storage in the Texas Panhandle continued during March when stocks were reduced 182,500 barrels, leaving a total of 7,541,600 barrels as of April 1.

ROCKY MOUNTAIN FIELDS

Record activity expected from current drilling.

* * *

Tertiary oil discovery leads to much exploration.

* * *

Ohio Oil Company's "mystery well" passes 4407 feet.

Casper, Wyo.—Drilling activity in the Rocky Mountain region has shown a steady up-swing with the temperature and is continuing at a rate that will establish a new record this year.

Major exploration and development activities in the area are centered in northern Colorado and southern Wyoming in what is known as the Tri-State area. In this locality is the Powder Wash field, in which Mountain Fuel Supply Company developed the first commercial production from Tertiary beds in the Rocky Mountain region.

This opening of a new producing horizon for practically the entire area has greatly stimulated exploration in the nearby structures, with the result that the Tri-State basin has a fair bid to lead the region in activity during the coming summer.

Wasatch Good at Powder Wash

Mountain Fuel Supply Company has two active wells in the Tri-State basin at present. On the Powder Wash field, Moffat County, northwestern Colorado, the company is drilling its third well. Both previous wells have found commercial oil in the Wasatch beds, the first in the lower formation and the second in upper levels of the same series. The company's J. C. Donnell, NE SE 31-12n-97w, is drilling at 3237 feet. Unconfirmed reports stated that the well had oil shows at 3204-12 feet. Other producers in the field encountered production at 3085-93 feet and at 5012-32 feet.

In the south Baxter Basin field, Sweetwater County, southwestern Wyoming, Mountain Fuel Supply Company has announced location for a new well in 16-16n-104w, to be known as Union Pacific 3.

South and east of Mountain Fuel Supply Company's developments in Powder Wash field, Phillips Petroleum Company and Anderson-Kerr Drilling Company are drilling a test on Dry Mountain structure. This well, Government 1, C SE SE 19-9n-99w, is reaming 10-inch hole to 15 inches at 1050 feet before running 12½-inch casing. The well is being drilled to test the productivity of the Wasatch beds.

Acreage adjoining that of Mountain Fuel Supply Company in Powder Wash field has been acquired by two California concerns operating jointly. Universal Consolidated Oil Company of Los Angeles and Italo Petroleum Corporation of America, a San Francisco firm, have taken over some 2240 acres in the area of which a 640-acre part is considered top structure material. The companies also are reported to have assembled leases amounting to around 19,000 acres along the Cherokee Ridge uplift, southwestern Wyoming, a parallel structure 20 miles to the north of Powder Wash anticline. A test of this area is planned for early this summer.

New Tri-State Location

Anderson-Kerr Drilling Company has released location for another test in the Tri-State area in C SE NE 17-11n-99w, on the Sheldon anticline, an east-west trending structure about six miles south of the Wyoming-Colorado line in Moffat County. The structure is slightly north and west of Powder Wash field.

Leases have also been taken in the area by Carter Oil Company, The Texas Corporation, and Yellowstone Oil Company, all of which plan tests to be drilled during the summer. Yellowstone Oil Company has started moving in two standard rigs to Big Sandy structure, Lincoln County, southwestern Wyoming, in the Big Piney area on which drilling is scheduled to start by June 1. Several leases in this area are

MOUNTAIN STATES
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
MONTANA		
BIG HORN COUNTY (Hardin Gas Field)—		
Hardin General Hospital 1, csl ne sw 23-1s-33e	¶1/10	680
Big Horn Oil & Gas Co. 28, nw sw se 14-1s-33e	¶1/10	737
WYOMING		
WESTON COUNTY (Osage Field)—		
Henry Egert 4, cwl sw ne sw 7-46n-63w	1	355
Chas. Stough 7, csw nw 4-46n-63w	1	300

*Failures; †Junked; ¶Million cu. ft. gas.

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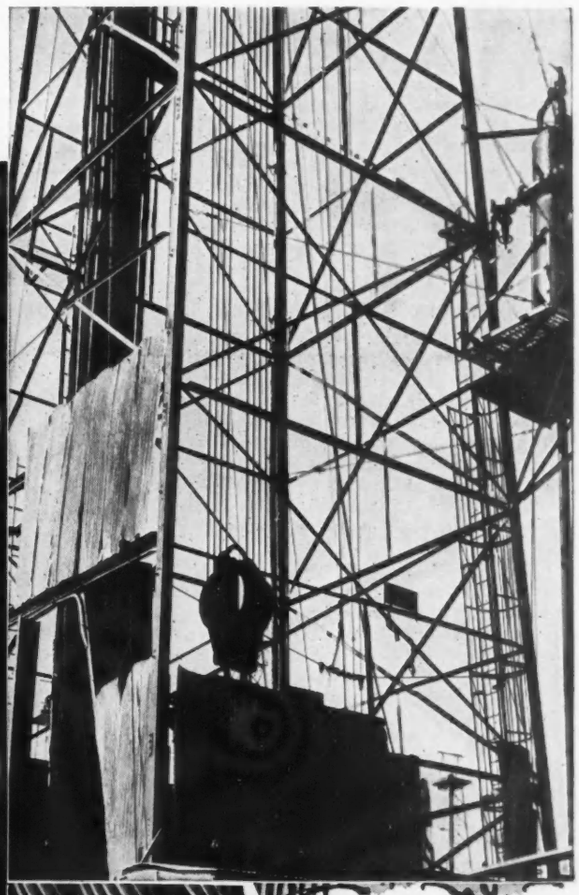

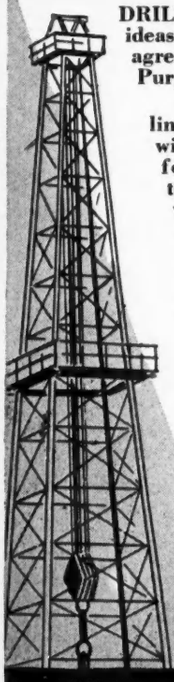

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also held by the Medicine Bow Oil Company.

In East Allen Lane field, Carbon County, southern Wyoming, eastern extension of the Allen Lake gas field, Medicine Bow Oil Company is carrying its Hintze-Government 1, C NE SE 18-22n-78w, further into the Basal Sundance formation in an effort to develop oil production for the field. Ohio Oil Company has an east offset to the well, Union Pacific-Wister 1, C SW SW 17-22n-78w, for which operators are waiting on rotary.

Deepening Rock River Well

Ohio Oil Company has started deepening operations in another well in Rock River field, Carbon County: Alba Dixon 8, NE SE 34-20n-78w, is rigging up to deepen from present producing depth in the Dakota at 3161 feet. It will deepen to the Sundance. The company's Diamond Cattle Company 6, NW NW 35-20n-78w, also deepening to the Sundance production level, is drilling at 3326 feet.

Ohio Oil Company's Putnam 6, NW NW 4-35n-65w, which has deepened to the bottom of the Basal Sundance sand in Lance Creek field, is still testing. Hole is bottomed at 4075 feet, five feet in the red beds. Putnam 8, SW SE 4-35n-65w, has set the seven-inch production string at 4020 feet on the top of the Basal Sundance formation and is swabbing in and testing. Hole bottoms in red beds at 4078 feet.

On the southwest side of the Lance Creek, Mackinnie Oil & Drilling Company's Thompson 2, NWc NW NE 7-35n-65w, is moving in equipment.

No further report has been released on the Ohio Oil Company's Leo 5 OPC-16, NW NW SW 35-36n-65w, three fourths of a mile to the east of the proved limits of the Lance Creek field, since the well passed the 4407-foot mark in the red beds. Presumably, it is to be carried to the Pennsylvanian series to test for possible deeper production in the field. Other companies refused to contribute to the cost of the deep test on the grounds that Sundance production was ample to care for market demands in the field and that deeper producing horizon development would involve costly offset operations in an unnecessary program.

To Test Byron Tensleep

In northern Wyoming, Ohio Oil Company's State 1, NEc 35-55n-97w, is installing pumping equipment preparatory to making a production test of Tensleep sand in which the hole is bottomed at 5450 feet. The company ran a test of the Embar at 5332-5410 feet which proved non-commercial. The well is in Byron field, Big Horn County. The company's Baker-Byron 2, SE NW 23-56n-97w, Byron, has set seven-inch casing at 5090 feet and is drilling ahead at 5121 feet with the Embar lime expected within the next 100 feet.

Empire State Oil Company's Unit 3 well, SE NE 33-34n-84w, in the South Casper Creek field, Natrona County, central Wyoming, encountered saturation in the Tensleep at 2660 feet and is bottomed in formation at 2667 feet, with 1070 feet of oil in hole. No production test has been run. This is the first well in the field to develop oil in this horizon. The field produces mainly from the Muddy sands at present.

First oil show in Harrison Township, northwest Ohio.

* * *

Drilling in Indiana shows increase after slump.

* * *

Three large gas wells completed in Oriskany pool.

Pittsburgh.—N. L. Stevens' wildcat on the Nagel farm, Section 26-5n-7e, Harrison Township, Henry County, in northwestern Ohio, made a show of oil at 1728 feet, where the hole filled 125 feet with oil, and at 1740 feet there was 360 feet of oil in the hole. With a shot of 100 quarts, the well caved at 1710 feet and is now being cleaned out at this depth with 325 feet of oil in the hole above this level. This is the first test to make a show of oil in Harrison Township.

Considerable enthusiasm is expressed by operators in this section over the Stevens' showing, and the majority of them are of the opinion that a new pool has been discovered. Stevens has over 1400 acres under lease in this area and plans to drill 10 more tests.

Operators on the deep test of William Snee and others on the Summit Hotel lease on Chestnut Ridge, South Union Township, Fayette County, Pennsylvania, are undecided as to whether they will drill deeper. It is bottomed in the Corniferous lime at 6667 feet, with the top of that formation at 6575 feet. Gauge shows in excess of 1,000,000 feet a day which, added to the gas from the old hole between the casings and shut in with the bradenhead, brings the total available to 1,500,000 feet a day.

This is a sidetrack job on a crooked hole in which it was impossible to run casing, leaving the old hole at about 4250 feet. The Oriskany sand was not reached and it is expected that another location for a test on this structure will be made. At present, 3½ miles of 4-inch line is being laid from Hopewood to the well.

Pennsylvania Deep Test Shows

A showing of about 25,000 feet of gas a day was made on the deep test of the American Natural Gas Company and T. W. Phillips Gas & Oil Company on the Perry S. Davis farm, 1 mile south of Prospect in Franklin Township, Butler County, Pennsylvania. It is shut down to dig a cellar under the rig and cement before drilling deeper. With an elevation of 1295 feet, the top of the Corniferous lime was at 5420 feet and the lime section had thinned out from the tests north and west of it. Top of the Oriskany sand was at 5548 feet. After cleaning out a small cave, drilling is to be resumed, and if gas increases, the test will be cased.

Most Indiana Drilling Shallow

Operations in the Indiana field are again on the increase, following a period of almost suspended activity. Many new wells are being started, for the most part scheduled for shallow horizons.

In Spencer County, George Beauchamp drilled the largest Indiana producer, John Heintz 3, to 519 feet, where it produced 8 barrels the first 24 hours after a shot. Location is Huff Township, Section 6-6s-3w. In Section 13-6s-6w, Grass Township, same county, Hollingsworth Oil & Gas Corporation's Patrick Axton 1 was drilled to 1317 feet without a show of gas or oil and has been abandoned.

A second Indiana producer was completed at 504 feet by Charles Dice as No. 5 on the Charles Krutz property. It produced 3 barrels the first 24 hours. It is in Perry County, Section 6-6s-3w, Anderson Township. A. O. Thayer completed Starner Bond 3, Knox County, Section 14-5n-10w, Busseron Township, as a commercial gas well at 732 feet.

Two other Indiana completions were failures: Parker & Lloyds test on the Charles Graves farm, Daviess County Section 34-3n-5w, Barr Township, depth 600 feet, and Midwest Development Corporation's test on the W. R. Meredith property, Daviess County, Section 13-2n-6w, Reeves Township, depth 790 feet.

West Kentucky Runs 3849 Barrels

Runs made from Western Kentucky wells served by Illinois Pipe Line Company averaged 3849 barrels daily during March. Two completions were recorded last week in this field: C. A. Shacklett & Company completed Ronnie Graham 2 as a 50-barrel producer, and are rigged up for No. 4 and drilling No. 3 on this lease. Henry Scholl's Alex Whitehouse 5 has been abandoned as a failure and the rig has been moved to another location on this lease for No. 6.

Three large gas wells were completed in the Oriskany gas pool of Kanawha County, West Virginia. George

W. Lepiere completed a test on the J. W. Legg farm, Poca district, at 4816 feet, or 16 feet in the Oriskany sand, which is good for 6,000,000 feet a day. The test on the E. E. Walker farm, Elk district, was completed by West Virginia Gas Corporation at 4859 feet and is also good for 6,000,000 feet a dav. The third was completed by Columbian Carbon Company on the James R. Jones farm, Elk district, at 5015 feet, and is showing for 5,000,000 feet a day.

Oriskany Field Busy

The Oriskany field of Kanawha County is the scene of increased activity: In Poca district, the Columbian Carbon Company has made a location for a test on the Henry R. Glass farm, adjoining the D. A. Griffith farm, and is drilling at 4720 feet on the B. R. Reed farm and at 2350 feet on the Mary Boggess farm. Hayes Oil & Gas Company is down 3885 feet on the E. C. Humphreys farm. United Fuel Gas Company has made location on the Kanawha Valley Bank lease (Alex A. Moore farm), 2 miles west of the good gasser on the C. C. Fisher farm, and Godfrey L. Cabot, Inc., has a location for a test on the Holmes Morton et al farm, southwest of the J. W. Legg well.

In Elk district, Columbian Carbon Company's J. C. Jordon test topped the Corniferous lime at 4826 feet. United Fuel Gas Company is down 4931 feet in its test on the Mollie Shafer et al lease. Twelve other wells are drilling in this district.

Location for No. 4741 on the George Creek Land & Mining Company tract, Malden district, has been made by United Fuel Gas Company. It is an offset to South Penn Oil Company's Kate Scott 3. This latter company is rigging up Kate Scott 4.

25 Completions in Ohio

Four producers with total production of 13 barrels daily comprised the Ohio fields' contribution to Eastern fields' production last week. Twenty-five completions were recorded, of which 11 were gas wells and 10 were failures.

Hall & Henning Company's Alice and Charles Algeo 5, which made two barrels natural, has been cleaned out after a shot of 40 quarts in the Keener sand at 1570-1587 feet and is making 5 barrels daily. Location is Section 21, Grandview Township, Washington County.

Five New Wells in Pennsylvania

Five completions were recorded in southwest Pennsylvania—2 small producers and 3 gas wells: South Penn Oil Company's M. Nickle 14, Greene Township, Beaver County, was completed in the Hundred Foot sand where it is showing for 3 or 4 barrels a day after a shot. Penn State Oil & Gas Company's H. H. Milliken 2 was deepened to 3178 feet, where it is showing as a small producer in the Gordon and Fifth sands. It is in Springhill Township, Greene County. Burley Wright and others completed Joseph McCracken 2, Richhill Township, Greene County, at 2722 feet in the Gordon stray sand. Gas, which first gauged 413,600 feet a day but blew down smaller, was at 2701 feet. Carnegie Natural Gas Company completed George W. Douglass 2, Peters Township, Washington County, as a gas well at 1613 feet. Top of the Injun sand was at 1582 feet, with about 220,000 feet of gas at 1600-1603 feet. The third gasser was completed by Keystone Gas Company on the George Martin farm, North Strabane Township, Washington County, at 3650 feet. It gauged 185,000 feet with low rock pressure.

Big Gas Well in Deep Field

Potter Development Company brought in a 13,000,000-cubic-foot gas well on the L. C. English farm, Harrison Township, Potter County, on the Pennsylvania side of the New York-Pennsylvania deep sand gas field. Gas was struck at 4800 feet and the rock pressure was 2100 pounds. Harrison Township field now has 9 gas wells, with a combined production of 118,000,000 feet.

Rig from the English well is being moved to site of a wildcat to be drilled on the Marshfield anticline, near Germania, where Potter Development Company has location on the Hasker property, 15 miles from any present producer. The company has 2000 acres under lease south and west of this location.

New York State Natural Gas Corporation is drilling on the L. G. Roberts property in the Sabinsville field, Tioga County, Pennsylvania, a little west of the French well which opened this field in August, 1935. Thirteen producers in this field have a potential output of 195,000,000 cubic feet a day.

EASTERN FIELDS

Completions

WEST VIRGINIA

Company, Well and Location	Init. Prod. Bbls.	Depth
BRAXTON COUNTY—		
Pittsburgh & West Virginia Gas Co., W. A. Ramsey 3	¶	2632
CLAY COUNTY—		
Virginia Gasoline & O. Corp., Brown, Swan, Goshorn & Geary 1248	20	1184
HARRISON COUNTY—		
Delaware Gas Co., Reynold Heirs 2	¶¼	3177
KANAWHA COUNTY—		
George W. Lepiere, J. W. Legg 1	¶6	4816
West Virginia Gas Corp., E. E. Walker 1	¶6	4859
Columbian Carbon Co., James R. Jones 1	¶5	5015
United Fuel Gas Co., Mohler Lumber Co. 4676	¶¾	4400
LINCOLN COUNTY—		
R. H. Adkins et al, J. W. Jeffers 1	¶½	1248
PLEASANTS COUNTY—		
Adam Ward et al, Solomon Robinson 1	¶	1830
RITCHIE COUNTY—		
Mud Lick O. & G. Co., T. M. Goff 1	¶	2128
South Penn Oil Co., Sarah J. Lemon 43	*	2563
ROANE COUNTY—		
J. T. Campbell et al, W. S. Fouty 2	10	1686
WETZEL COUNTY—		
Mfgrs. Lt. & Heat Co., T. N. Scheibelhood 1	¶2	2131

OHIO

Company, Well and Location	Init. Prod. Bbls.	Depth
ATHENS COUNTY—		
Ohio Fuel Gas Co., Addie Douglas 1	¶	1524
COSHOCTON COUNTY—		
Preston Oil Co., Cary D. Harris 3	*	3180
Cary D. Harris 5	*	3150
GUERNSEY COUNTY—		
Moss & Co., Walter Warne 1	*	1285
Geo. Jewell, Wm. Barnes et al 1	*	1276
Roy Hammond & Co., David Patton 1	*	1063
Ferguson & McCullough, L. D. Tucker 1	¶	1102
HOCKING COUNTY—		
Preston Oil Co., Sunday Creek Coal Co. 146	¶	....
LICKING COUNTY—		
Wehrle Gas Co., John Murphy 2	5	739
G. H. Long, Eliza Fulton 1	4	788
MEIGS COUNTY—		
Carter & Smith, Mona Wolf 1	¶	2110
Ohio Fuel Gas Co., Cyremus Rose 1	¶	2072
C. A. Cody, C. E. Mayhugh 2	*	1021
Barton Utsinger, Sherman Buskirk 1	*	825
C. W. Hobeck & Co., Higginbatham 1	*	1930
MONROE COUNTY—		
Johnson Oil Co., Clarence Busche 1	1	1329
Jims Run Oil Co., Enos Haught 3	¶	1369
NOBLE COUNTY—		
George Robinson & Co., W. S. Atkinson 2	¶	755
Effie Bruce 1	¶	850
VINTON COUNTY—		
Kelch Oil & Gas Co., Albert Kelch 3	3	935
WASHINGTON COUNTY—		
Beardmore Gas Co., Bertha Winland 6	¶	1398
Devitt & Co., Frances Fisher 16	*	662
McTaggart & Co., A. E. Ryan 1	¶	1793
W. F. Burgess & Co., W. J. Todd 6	*	605
WAYNE COUNTY—		
Harmon & George, Mary Long 1	¶	2912

KENTUCKY

Company, Well and Location	Init. Prod. Bbls.	Depth
OHIO COUNTY—		
C. A. Shacklett & Co., Ronnie Graham 2	50	....
Henry Scholl, Alex Whitehouse 5	*	....

INDIANA

Company, Well and Location	Init. Prod. Bbls.	Depth
DAVIESS COUNTY—		
Parker & Lloyds, Charles Graves 1	*	600
Midwest Development Corp., W. R. Meredith 1	*	790
KNOX COUNTY—		
A. O. Thayer, Starner Bond 3	¶	732
PERRY COUNTY—		
Charles Dice, Charles Krutz 5	3	504
SPENCER COUNTY—		
Hollingsworth Oil & Gas Corp., Patrick Axton 1	*	1317
George Beauchamp, John Heintz 3	8	519

PENNSYLVANIA

Company, Well and Location	Init. Prod. Bbls.	Depth
BEAVER CONUTY—		
South Penn Oil Co., M. Nickle 14	3	....
GREENE COUNTY—		
Penn State Oil & Gas Co., H. H. Milliken 2	1	3178
Burley Wright et al, Joseph McCracken 2	¶	2722
POTTER COUNTY—		
Potter Development Co., L. C. English 1	¶13	4800
WASHINGTON COUNTY—		
Carnegie Natural Gas Co., Geo. W. Douglass 2	¶	1613
Keystone Gas Co., Geo. Martin 1	¶	3650

ILLINOIS

Company, Well and Location	Init. Prod. Bbls.	Depth
CLARK COUNTY—		
E. Parker et al, M. E. Endsley 1, nw ne sec 4-11n-14w, Parker Township, elev 645 ft, Salem formation, Lower Mississippian	*	520
CLINTON COUNTY—		
W. C. McBride, Inc., Stephen Holtgrave 1, ne se sec 28-2n-3w, Wade Twp., elev 455 ft, Paint Creek formation, Chester series, Upper Mississippian	*	1206
Ohio Oil Co., C. Trame 3, sw ne nw sec 8-1n-3w, Santa Fe Twp., elev 499 ft, top Carlyle sand, Chester series, upper Mississippian at 1028 ft.	25	1049
CRAWFORD COUNTY—		
Wm. & Dave Goodwin, E. G. Walters 4, nw sw nw sec 7-7n-13w, Oblong Twp., Robinson sandstone, basal Pennsylvanian	*	1004
LAWRENCE COUNTY—		
Warren Hastings et al, W. A. Lagow 1-A, se se sec 30-5n-10w, Russell Twp., top Pennsylvanian 619 ft, elev 426 ft	¶1	622
McDONOUGH COUNTY—		
Thomas Terril et al, John Hughbanks 2, se sw sec 16-4n-4w, Lamoine Twp., elev 512 ft, top Hoing sand, upper Devonian, at 415 ft, shot with 45 qts	3	425
MARION COUNTY—		
Adams Louisiana Oil Co., Glenn Merryman 2, se sw sec 21-4n-1e, Patoka Twp., elev 498 ft, top Benoist sand, Chester series, Upper Mississippian at 1394 ft	87	1420
ST. CLAIR COUNTY—		
W. A. Halt, R. A. Moffat 1, ne c se sec 36-3s-6w, Marissa Twp., elev 518 ft, Lower Chester, Upper Mississippian	¶1	800
WABASH COUNTY—		
Mahutska Oil Co., Mark Madden 11, ne ne sec 7-1n-11w, Wabash twp., top Biehl sandstone, basal Pennsylvanian at 1407 ft, shot with 60 qts.	10	1434

*Failures; †Junked; ¶Million cu. ft. gas.

CALIFORNIA FIELDS

Large increase in allowable appears likely.

* * *

Greater activity forecast for Wilmington field.

* * *

Several deep tests delayed with fishing jobs.

Los Angeles.—Although California's recommended production quota is 580,000 barrels daily, production of more than 40,000 barrels per day in excess of this amount during the first half of April, coupled with considerable new drilling and a higher rate of well completion, presage an average for the whole month of about 620,000 barrels daily. This situation seems to give strength to rumors that the allowable for May will be 60,000 barrels more per day than that currently existing.

A survey of field operations shows 46 new locations in California, with Wilmington field getting 15 of the lot. Activity in this field shows no sign of abating; many operators there indicate they will drill more wells than called for in their respective campaigns planned several weeks ago. In this connection, it is believed city authorities will soon permit closer spacing of wells.

In spite of the over production, premiums have to be paid for spot purchases of light, refinery crude. There is a little fear that the large expected production of comparatively heavy oil at Wilmington will weaken the market for that type of crude. Wilmington crude is said to have a good value for cracking stock for blending purposes.

El Segundo Well Blows In

Ohio Oil Company's Gough 3 at El Segundo recently blew in, out of control, while drilling at 7094 feet in brown shale. The well was blowing gas, mud and fresh water without any oil. It went over the top in old time style. During the early stages of the blowout, 3500 feet of drill pipe was dropped into the hole, but the well later was brought under control, and is being cleaned out.

The deepest hole in California, Superior Oil Company and Union Oil Company's Kern County Land Co. 8, Section 11-30-26, is coring ahead in shale slightly below 11,000 feet. This well is about five miles northeast of Ten Section field and about the same distance southeast of the Greeley area. Seven-inch casing was cemented at 10,380 feet. This hole will continue to drill deeper, probably below 12,000 feet, unless mechanical troubles are encountered.

Another 10,000 foot hole in Kern County, in the Lerdo Area, Arkelo Petroleum Company's No. 1, Section 23-28-26, with bottom at 10,056 feet, is trying to fish out drill pipe. If the pipe is not recovered it will be sidetracked.

Fishing On Deep Well

Union Oil Company's Bell 100 at Santa Fe Springs is fishing for drill pipe, with bottom at 10,789 feet. If all of the stuck drill pipe cannot be recovered, then the hole will be sidetracked and more hole made.

Union Oil Company's deep Dominguez test, Callender 50, bottomed at 10,435 feet, is being reamed to set liner, and a production test is expected within the next week. In this hole, 8⅝-inch casing was cemented at 6860 feet. This is the deepest hole ever drilled in the field, and there is a possibility that production will be established at this extreme depth.

At Kettleman Hills, Kettleman North Dome Association's No. 4-18J, is drilling below 9600 feet in hard sand. Last casing was 9⅝-inch, cemented at 8387 feet.

In the new Greeley field in Kern County, Standard Oil Company of California evidently wants to know about the lower horizons; its No. 11-2, Section 20-29-26, is drilling in shale and sand at a point below 8240 feet. Nine-inch casing has been cemented at 7725 feet.

CALIFORNIA Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
FRUITVALE—		
Exeter Oil Co., Henry 2	175	4206
Paul L. Kelly, Greeley 2	375	3160
Seahawk Pet. Co., No. 1-C	300	3214
KERN FRONT—		
Bishop Oil Co., No. 8	240	1987
Dougan Oil Co., Newhouse 2	200	2888
Standard, Ward 5	100	1975
Texas Co., Lehman 6	200	2008
Tide Water Associated, No. 42	100	2200
LOST HILLS—		
Tide Water Associated, No. 9-A-3	30	1560
MIDWAY SUNSET—		
Alford Oil Co., Fried 8	500	2924
Holly Dev. Co., Evans 1	100	2326
Merritt Annex Oil Co., Fried 4	400	3002
No. American Oil Cons. No. 5	50	4167
MOUNTAIN VIEW—		
Hogan Pet. Co., Porter-Day 9	500	6069
Vesta Pet. Co., Vesta 11	160	4972
ROUND MOUNTAIN—		
Honolulu Oil Corp., No. 24	225	2064
EL CAPITAN—		
Shell, Covarubias 1-20	190	2717
GATO RIDGE—		
Barnsdall, Tognozzini 6	1500	2515
Petrol. Corp., Tognozzini 3-A	2500	2726
KERN COUNTY—		
Bear Mountain Oil Co., Tejon 2	*	1052
Barnhart-Morrow Cons. Davies 1-A	*	3051
KINGS COUNTY—		
Tide Water Associated, Avenal 2	*	3088
SAN LUIS OBISPO COUNTY—		
R. A. Foster's McKee 1	*	5087
J. C. Theriot, Holland 1	*	2135
DOMINGUEZ—		
Union, Callender 53	2075	7550
Carson 9	470	7555
EL SEGUNDO—		
Republic Pet. Co., No. 5	160	7383
EAST COYOTE—		
Bandini Pet. Co., Kammerdiner 1	60	2855
MONTEBELLO—		
Richfield, Pasadena 1	475	5910
TORRANCE—		
Doherty Oil Co., Doherty 1	60	3663
Two and One Oil Co., No. 1	75	4465
WILMINGTON—		
Bankline Oil Co., D. H. C-3	250	3313
General Pet. Corp., Ford 2	1675	3590
Ford 3	225	2707
Geo. F. Getty, No. W-5	625	3580
Royalty Service Corp., Com. 4	500	3597

*Failures; †Junked; ¶Million cu. ft. gas.

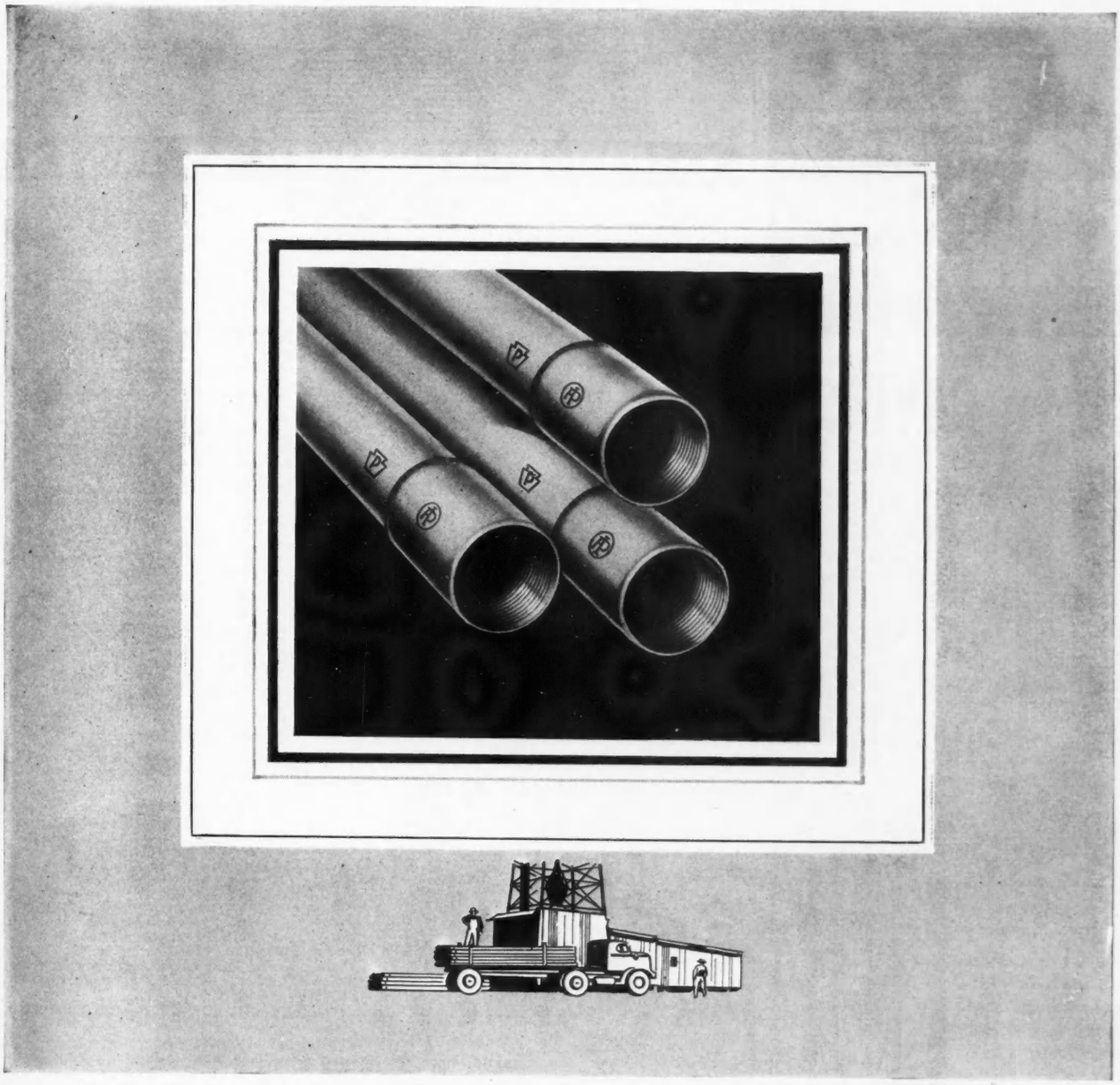
Small Yield From Deep Well

Another deep test for California is Continental Oil Company's Kern County Land Co. A-1, Section 8-27-24, in Kern County, with bottom at 9591 feet. In this hole, the four-inch drill pipe was stuck and 46 feet of additional hole was made with a 2½-inch drill pipe through the 4-inch drill pipe. The stuck drill pipe was cemented at 9303 feet, and a milling tool used. Then 309 feet of 2⅜-inch liner, including 88 feet of perforated, was landed on bottom. It was put on gas injection under 950 pounds pressure and is flowing about 3 barrels an hour, 20 percent of mud. It probably will be several days before its possibilities can be determined.

In the Newhall area in Los Angeles County, Barnsdall Oil Company has announced location for the second test. The company's Ranch San Francisco 1, discovery well, is making slightly better than 200 barrels of 36 gravity clean oil. The second hole for the new field will be drilled about 1000 feet northeast of the discovery. Although Barnsdall controls most of the best looking acreage in the new area, Holbrook Petroleum Company's Newhall Land 1, Section 28-4-16, is bottomed at 5089 feet and is putting in heavier equipment. This is generally known as the "policemen's well," due to the fact that Los Angeles policemen own practically all of the stock in the company. In this hole, 10-inch casing was cemented at 2564 feet.

On the mesa at Newport, where very heavy oil has been recovered in past years close to the ocean front, Mesa Oil Company is drilling in hard brittle shale at 6800 feet, and evidently intends to go deeper before giving up. Some years ago several failures were drilled on the mesa above Newport. One operator sunk a shaft in an effort to mine the oil, but gave it up. The venture would not pay, although he penetrated the heavy oil zone.

Tulsa.—Members of the Tulsa chamber of commerce oil industries committee were guests of Frick-Reid Supply Corporation at the regular monthly meeting of the group April 19. The meeting was held at 6:30 p. m. in the Tulsa club.



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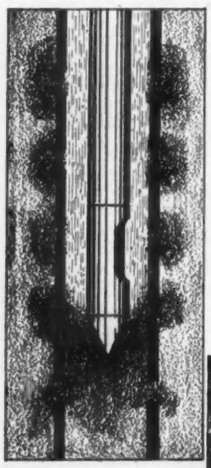

Ordinary spudding types of bailers (See Fig. 1) actually drive the material back out of the pipe and wedge it tight in the perforations, stopping the drainage.

Fig. 1

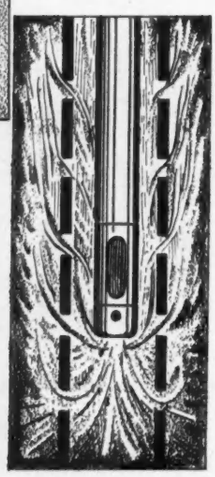

Fig. 2

The Cavins, utilizing the hydrostatic forces present in the well, draws everything into the well; thus flushing the perforations clean and leaving a proper drainage area behind the pipe. (See Fig. 2)

For detailed information on The Cavins, send for Bulletin No. 36

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Lake Charles, Louisiana

IMPORTANT WILDCAT TESTS

CALIFORNIA

FRESNO COUNTY

CANTUA CREEK—Western Gulf's S. P. L. 3, 3-17-15, td 8531 ft, perforated 6480 to 6580 f,t also 6350 to 6450 ft to test.

KERN COUNTY

PREMIER AREA—Allied Pet. Co.'s Allied 21, 29-27-27, dr shal and os 1951 ft. Bojaki Oil Co.'s Bowen 1, 28-27-27, sd 1959 ft.

LERDO—Arkelo Pet. Co.'s No. 1, 23-28-26, td 10,056 ft, fsh dr pipe.

KERN FRONT — Barnhart-Morrow Cons. Davies 1-A, 3-28-27, td 3051 ft, in gray sand, abn. Seskayden Oil Co.'s No. 3-A, 17-28-27, td 2890 ft, plug 2870 ft, bailing.

ARVIN—Bear Mountain Oil Co.'s Tejon 2, 16-31-30, td 1052 ft in granite, abn. General Pet. Corp.'s Arvin 1, 26-31-29, td 7462 ft, plug 7453 ft, sd, to drop from report.

GRAPEVINE—Buffalo Oil Co.'s Tejon 1, 5-10-19, sd 4452 ft. Ohio Oil Co.'s Title Ins. D-1, 21-11-19, dr hard shale 7880 ft. Reserve Oil & Gas Co.'s No. 2-6, 2-10-19, spud 4-13, dr; Ritchie 33-1, td 6030 ft, plug 4990 ft, sd; Tejon 33-2, sd 4505 ft; Tejon 33-3, td 4431 ft, shut in.

WASCO—Continental Oil Co.'s K.C.L. A-1, 8-27-24, td 9591 ft, stuck dr pipe, drilled 46 ft deeper with 1½ in dr pipe through 4-in dr. pipe, running 2⅜ in liner to bottom, to test. Seaboard Oil Corp.'s K.C.L. C-1, 26-27-24, dr sandy shale 6618 ft.

ROSEDALE—Continental Oil Co.'s K.C.L. B-1, 12-29-26, td 6976 ft, co.

DEVIL'S DEN—Den Pet. Co.'s Bates 1, 20-25-19, dr brown shale 3940 ft. Geo. Goodrum's Baron 1, 24-25-18, dr shale 135 ft. Lube Oil Co.'s Gordon 1, 2-25-18, td 4280 ft, to plug and test upper showings.

JASMINE—Doule Pet. Corp.'s Quinn 1, 15-25-27, td 2956 ft, plug 2882 ft, sd; No. 2, dr gray sand 2590 ft.

EDISON—East Edison Oil Co.'s No. 1, 23-20-30, dr sand and shale 1130 ft.

ROUND MOUNTAIN—Eastmont Oil Co.'s Olcese 1, 16-28-29, dr shale 890 ft. Pageman & Hennes' Pagehen 1, 10-28-29, ready to spud.

ELK HILLS—Elk Hills Pet. Co.'s No. 1, 14-31-28, sd 7580 ft.

NO. KERN RIVER—Hub Oil Co.'s No. 1, 8-28-28, dr sandy shale 831 ft.

RIO BRAVO—Mohawk Pet. Co.'s K.C.L. 1, 23-29-25, dr shale 7911 ft, no showings. Petroleum Securities Co.'s Wright 1, 23-29-25, spud and sd. Union's Kern Co. 1-34, 34-28-25, dr shale and sand 5380 ft.

TEN SECTION—Shell's Canal 21-14-, 14-30-25, dr gray sand, 6180 ft. Superior Oil Co. and Union's K.C.L. 8, 11-30-26, dr shale strks sand 10,910 ft.

GOSFORD—Signal Oil & Gas Co.'s K.C.L. 1-A, 21-30-27, dr gray sand 8023 ft.

WEST MOUNTAIN VIEW — Sunset Oil Co.'s Sunset-Starr 1, 17-30-28, td 967 ft, wocs 11¼ in on bottom.

McGUNDEN—Superior Oil Co. and A. T. Jergins Trust's Crome Com. 1, 36-29-28, dr brown shale 4634 ft.

SO. MARICOPA—Trans-Line Pet. Corp.'s No. 1, 3-10-23, sd 662 ft.

SAN EMIDIO—Union's No. C-2, 33-11-22, core hole, dr 430 ft.

MIDWAY SUNSET—Valley Oil Co.'s No. 1, 18-32-23, sd 2815 ft.

BAKERSFIELD—Wilshire Oil Co.'s Cohn 1, 35-29-27, rur.

MISCELLANEOUS

HUMBOLDT COUNTY—Texas Co.'s Eureka 2, 22-3-1, td 7418 ft, co.

KINGS COUNTY—Birch-Royer Oil Co.'s Orr 1, 5-23-17, rur. Central Calif. Utilities Co.'s Kettleman-Lakeview 3, 11-23-19, td 1207 ft, plug 1193 ft, sd. Dudley Ridge Dev. Co.'s No. 2, 24-23-20, rur. Pyramid Prod. Co.'s Spreckles 2, 16-24-18, lcn, to drop from report. Kettleman View Oil & Gas Co.'s No. 1, 9-22-19, td 4787 ft, wocs 6⅝ in at 3400 ft. T. G. Norell's Guess 1, 7-21-21, sd 6172 ft. Glen C. Stone's Teeter 1, 25-20-20, td 1040 ft, wocs 8⅝ in at 790 ft. Tri-Counties Oil Co.'s Olson 1, 10-23-22, dr shale 1674 ft. Tide Water Associated's Avenal 2, 35-23-17, td 3088 ft, in gray sand, abn.

SAN BENITO COUNTY—Tide Water Associated's Murphy Ranch 1, 5-12-4, td 6880 ft, flowing gas, muddy water and trace of oil, trying to locate water.

SAN JOAQUIN COUNTY—Coast Explor. Co.'s T.F.I. 1, 2-3-4, td 3048 ft, formation tester, showed for 20,000,000 cu ft of gas.

SOLANO COUNTY—Amerada Pet. Corp.'s Drouin 2, 25-4-2, td 4463 ft, estimated good for 30,000,000 cu ft gas, shut in; Emigh 2, 26-4-2, dr shale and sand 3050 ft.

SUTTER COUNTY—Buttes Oilfields' No. 4, 2-15-1, dr shale 5800 ft.

TULARE COUNTY—J. W. Alford's Williams 1, 28-16-23, sd 1023 ft. R. R. Ellis' No. 1, 20-24-23, rur. E. P. Jennings' No. 1, 4-24-23, td 2707 ft, to redr; No. 2, 33-23-23, rig.

MONTEREY COUNTY—Amil A. Anderson's No. 1, 15-24-14, dr blue shale 690 ft. Shell's Branch 2, 34-24-10, dr shale 7855 ft. Texas Co.'s Dunphy 1, 30-19-7, dr shale 4662 ft.

SAN LUIS OBISPO COUNTY—Aviation Oil Co.'s Britnall 1, 10-11-35, sd 1930 ft. Barnsdall's K.C.L. A-1, 1-32-20, dr shale 3970 ft. I. L. Burch's No. 1, 3-10-26, td 3209 ft, running formation tester. Burkholder Oil Corp.'s Clay 1, 14-10-26, dr blue shale and sand 2184 ft. R. A. Foster's McKee 1, 2-32-23, td 5087 ft, abn. Gretna Corp.'s Miano 1, 25-30-10, dr shale 150 ft. Pismo Pet. Co.'s No. 1, 5-32-13, dr shale 4424 ft. Temblor Oil Co.'s No. 1, 22-31-21, dr shale 994 ft. United Foreign Oil Co.'s Panorama 2, 2-32-21, sd 2436 ft, to drop from report.

SANTA BARBARA COUNTY—E. C. Arnold's Careaga 1, 8-8-33, rur. Julius Dietzman's Fithian 1, 8-4-25, sd 1025 ft, to drop from report. Daniel Fisher's No. 1, 28-11-29, sd 650 ft, to drop from report. Murdock & Allen's No. 1, 16-7-30, material on lcn. Nine Springs Oil Co.'s Brinkinhoff 1, 9-7-30, sd 3300 ft. W. D. Shaffer's Houk 1, 9-9-33, sd 5003 ft. Todos Santos Oil Co.'s No. 1, 29-9-34, td 2365 ft, co. Union's O'Donnell 1, 21-10-34, dr 4020 ft. Valley Oil Co.'s Chief 1, 20-9-34, sd 1901 ft, did not run casing.

VENTURA COUNTY—Continental Oil Co.'s Casitas 1, 7-3-23, dr hard shale 6227 ft. El Rio Oils-Canada Co.'s El Rio 1, 6-1-21, rig. Speik Oil Co.'s Speik 1, 35-5-19, dr shale 2174 ft. Vaca Oil Explor. Co.'s Calif. Lands 1, 6-1-21, sd 2830 ft, to drop from report. Giovanni Vai's Scott 1, 4-4-21, technical spud 4-11, rur.

ABBREVIATIONS

The following abbreviations, signs, etc., are used in completions and wildcat reports in THE OIL WEEKLY.

*—*dry hole abandoned well.*
‡—*salt water (completions).*
†—*junked and abandoned.*
¶—*million feet of gas.*
abd—*abondoned.*
bbls—*barrels.*
br—*building rig.*
b.s.—*basic sediment.*
csg—*casing.*
co—*cleaning out.*
dd—*drilling deeper.*
dk—*derrick.*
dr—*drilling.*
fsg—*fishing.*
ft—*feet.*
hfw—*hole full of water.*
in—*inches.*
lcn—*location.*
m—*milling.*
mim—*moving in materials.*
mit—*moving in tools.*
mot—*milling on tools.*
n, s, e, w—*north, south, east, west.*
oih—*oil in hole.*
owdd—*old well drilling deeper*
owpb—*old well plugging back.*
pb—*plugged back or plugging back.*
r—*reaming.*
rog—*rig on the ground.*
rur—*rigging up rotary tools.*
rust—*rigging up standard tools.*
sd—*shut down.*
sdtr—*sidetracking.*
sg—*show gas.*
si—*shut in.*
so—*show oil.*
so&g—*show oil and gas.*
spd—*spudding.*
sr—*straight reaming.*
sw—*salt water.*
td—*total depth.*
ur—*underreaming.*
wih—*water in the hole.*
wo—*workover.*
wocs—*waiting on cement to set.*
wosr—*waiting on standard rig.*

KANSAS

BARBER COUNTY — Barbara Oil Co.'s Holmes 1, ce¼ se 15-33s-13w, td 4847 ft, pot. flow 441 bbls oil and est. 11,000,000 cf gas, comp.

BARTON COUNTY — I. T. I. O. Co.'s Schrepel 1, se se ne 26-20s-11w, 2000 gal A, 3295-3325 ft, td, pot. p 1451 bbls oil, comp. Herndon Drlg. Co. & Morgan & Flynn's Robenseifer 1, cnw 7-8s-15w, ur 12-in csg 1076 ft. C. L. Price et al's Kraft 1, sw nw ne 10-17s-11w, ur csg. C. L. Carlock's Leibel 1, se ne se 18-18s-11w, dr 2220 ft. Ralph Wixon & Union O&R Co.'s Frederick 1, nw nw nw 12-16s-13w, set 8-in csg 2780 ft, dr 2805 ft. Geo. Dickey et al's Boger 1, se se ne 15-16s-13w, dr 1270 ft. C. L. Carlock's Ehly 1, ne ne se 5-18s-11w, dr 2500 ft. C. H. Weaver's Stumps 1, ne ne ne 3-17s-12w, td 754 ft. Wakefield et al's Scheurmann 1, ne ne sw 31-16s-15w, dr 1090 ft. Stanolind O&G Co.'s Struder 1, se se sw 26-16s-13w, mim. S. E. Bailey's Hammeke 1, ne ne sw 12-18s-12w, co 2100 ft. Stanolind O&G Co.'s Meggars 1, sw sw sw 21-20s-11w, set 12-in csg 128 ft, dr 927 ft.

BUTLER COUNTY—A. M. Landon et al's McCaig 1, ne ne se 13-28s-6e, td 2740 ft, pb 2737 ft, shot and p 90 bbls oil 24 hrs, comp. C. L. Seibel et al's Bisagno 1, se se nw 24-25s-6e, set 10-in csg 1760 ft, dr 1940 ft. Vickers Pet. Co.'s Voth 1, cnl s½ sw ne 32-24s-4e, dr 1980 ft. Sid Neff et al's Church 1, sw ne se 8-28s-5e, fsg 1400 ft.

CHASE COUNTY—Hanna et al's Brothers 1, se se nw 25-20s-8w, td 3691 ft, D&A.

CHAUTAUQUA COUNTY — W. M. McKnab's Griffith 1, sw sw sw 11-32s-10e, set 10-in csg 746 ft, dr 1323 ft. E. I. Shaffer's Nuckalls 1, nw nw nw 12-33s-9e, ur 10-in csg 900 ft. Ira Scott et al's Lambe 1, sw nw ne 18-33s-13e, set 8-in csg 915 ft, dr 1355 ft.

COWLEY COUNTY—Tom Palmer's Lowe 1-A, sw se se 3-32s-5e, dr 2500 ft. Ryan Consolidated's Couch 1, sw sw se 13-30s-5e, ur 6-in csg 2418 ft. Elmer Ash et al's Bolack 1, nw nw se 22-32s-6e, spd. Bess & Gralapp et al's Wakefield 1, ne se sw 18-30s-6e, spd.

DECATUR COUNTY—Bruce et al's Newbold 1, cne sw 34-2s-28w, rur.

EDWARDS COUNTY—Royal Pet. et al's Krupp 1, nw nw se 18-24s-19w, fsg 2603 ft.

ELK COUNTY—Wentz et al's Love 1, sw se ne 35-30s-9e, set 8-in csg 1548 ft, dr 1690 ft.

ELLIS COUNTY—Empire's Samuelson 1, ne ne ne 31-11s-16w, woc. Murphy Oil Co.'s Weisner 1, se se sw 12-14s-19w, ur 8-in csg 3470 ft. Mazda Oil Co.'s Henderson 1, sw sw ne 27-11s-18w, dr 1215 ft. Noble Pet. Corp.'s O'Laughlin 1, nw nw se 13-12s-19w, set 8-in csg 2962 ft, dr 2985 ft. Earl Wakefield's Putnam Mort Co. 1, se se nw 32-15s-17w, so 2910 ft, dr 3000 ft. Bridgeport Mach et al's Froelick 1, nw nw se 4-13s-16w, dr 2040 ft. J. C. Shaffer, Inc's Staab 1, se se se 25-12s-18w, mim. J. I. Muth's Penny 1, nw ne se 29-14s-18w, spd and sd. Elwell & Tree Oil Co.'s Wickham 1, sw sw ne 10-11s-19w, rur. Billings' Smith 1, se se nw 14-12s-16w, spd.

ELLSWORTH COUNTY — Orville Lee's Larkin 1, nw nw nw 15-16s-8w, sd 150 ft.

FINNEY COUNTY—Keith & Olson Drlg. Co.'s Ely 1, nw nw sw 34-22s-29w, td 5556 ft, D&A.

GREENWOOD COUNTY—Ohio Oil Co.'s Schwab 1, se sw se 9-24s-10e, p 9 bbls oil and 85 bbls wtr, 24 hrs. Shull Drlg Co.'s Cannon 1, ne se ne 23-25s-12e, dr 1100 ft. Dr. Shippey's Boone 1, ne ne nw 21-26s-2e, td 1875 ft, D&A. L. C. Balwanz' Travellers Ins. Co. 1, csw sw 23-26s-10e, dr 1650 ft.

HAMILTON COUNTY—Denver P&R et al's Porter 1, sw sw ne 30-20s-41w, lcn.

HARPER COUNTY—Carter Oil Co. et al's Seihart Estate 1, csw nw 4-34s-8w, dr 4430 ft.

HARVEY COUNTY—E. I. Shaffer et al's Epp 1, se se sw 15-23s-3w, lcn. Harburney Oil Co.'s Schrag 1, nw nw se 24-22s-3w, td 3711 ft, D&A.

KEARNEY COUNTY — J. L. Murphy's Masonic Home 1, cnw¼ 1-25s-36w, rur.

LOGAN COUNTY—Rosespring Drlg. Co. et al's Wright 1, cse se 12-15s-35w, fsg 4025 ft.

LYON COUNTY—Clyde Fred et al's Bruce 1, nw nw nw 13-18s-10e, woc.

McPHERSON COUNTY—Hutchinson O&G Co. et al's Berg 1, sw sw se 15-20s-3w, set 8-in csg 3082 ft, so 3098 ft, hfw 3235 ft. Wamhoff et al's Nuse 1, se se sw 18-18s-4w, set 10-in csg 110 ft, woc. Bradley Bros.' Barnholt 1, sw sw se 30-20s-5w, set 12-in csg 855 ft, dr 1480 ft. Fred C. Frank et al's Doles 1, se nw ne 12-19s-1w, sd 600 ft. Smith et al's Larson 1, nw nw sw 35-18s-5w, ru.

MITCHELL COUNTY—Geo. Seidhoff et al's Greiss 1, sw sw se 16-8s-10w, set 8-in csg 2510 ft, dr 2660 ft.

NESS COUNTY—Newton Dev. Co.'s Tenny 1, nw nw se 19-18s-25w, hfw 4100-10 ft, ur 10-in csg. Patton & Paul's Lank 1, se se sw 35-18s-21w, lcn.

OSBOURNE COUNTY—J. E. Waldron's Neuschwanger 1, se ne nw 11-8s-14w, sp and sd.

PAWNEE COUNTY — Canshaw et al's Riederer 1, cw½ nw se 29-21s-19w, set 10-in csg 900 ft.

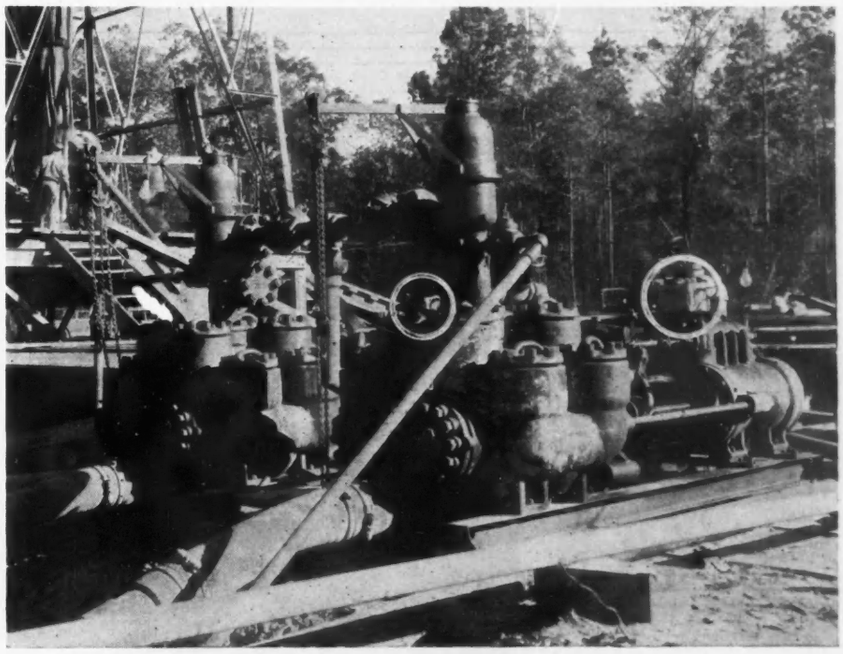
RENO COUNTY—Clyde Pulse et al's Payne 1, sw nw ne 4-22s-7w, 1000 gal A, p 80 bbls oil, 2000 gal A, p 245 bbls oil 20 hrs, testing. Atlantic's Page 1, se nw nw 19-23s-7w, td 4089 ft, D&A. Olson Drlg. Co. et al's Herriman 1, nw nw nw 22-24s-8w, dr 3860 ft. Imo O&G Co. et al's Watkins 1, se se se 14-22s-7w, dr 550 ft. Westgate-Greenland Oil Co.'s O'Sullivan 1, sw sw ne 24-23s-5w, rust. Sinclair Prairie's Nett 1, nw nw se 32-26s-4w, set 16-in csg 220 ft, dr 1240 ft.

RICE COUNTY—T. C. Johnson's Schubert 1, sw sw sw 9-20s-10w, set 5-in csg 3380 ft, 2150 ft wih, 250 ft oih. L. E. Douglas' Coyne 1, ne se se 24-21s-8w, sd 2415 ft. John Hanna et al's Fulton 1, nw nw ne 24-19s-6w, set 8-in csg 2616 ft. C. E. Skiles et al's Helmer 1, nw nw ne 7-19s-8w, ru. Skelly Oil Co. & Ewers-Simpson Oil Co.'s Linville 1, sw nw ne 2-20s-10w, td 3327 ft, D&A. Fred Phillips et al's Hubenett 1, sw ne sw 23-20s-6w, dr 2430 ft. W. E. Witt et al's Fair 1, ne se se 4-22s-8w, sd 1890 ft. Union O&R Co. et al's Baker 1, sw sw ne 33-20s-6w, set 13-in csg 1510 ft, dr 2115 ft. Comanche Oil Co.'s Cramm 1, sw sw se 15-19s-9w, br. Hipple et al's Wernet 1, ne ne nw 11-20s-6w, spd. Bradley Oil et al's Ginter Heirs 1, nw nw nw 13-20s-8w, lcn abd.

ROOKS COUNTY—Snowden & McSweeney's Hindman 1, ce¼ nw 35-7s-17w, p 20 bbls oil per day Lester & Dean's Burrt 1, se se ne 29-10s-20w, set 8-in csg 3123 ft, dr 3526 ft. Phillips Pet. Co.'s Manquist 1, sw sw nw 9-9s-17w, dr 1880 ft. Jones Bros. Drlg. Co.'s Wiss 1, nw nw nw 8-10s-8w, dr 2633 ft. Basin Oil Co.'s Baxa 1, ne ne ne 23-9s-17w, dr 2960 ft. Buckner & Schoff's McConnell 1, ne ne ne 34-6s-18w, set 6-in csg 3148 ft, dr 3365 ft. Twin Drlg. So.'s Doughty 1, sw sw sw 15-8s-19w, sso 3470 ft, hfw 3490 ft. S. C. Hoel et al's Ives 1, sw sw ne 11-7s-18w, ru. Brunson Drlg. Co. et al's Casey 1, se se ne 22-9s-16w, ru. Graham et al's Fike 1, sw sw sw 9-9s-17w, ru to dd.

RUSH COUNTY—S. A. Murphy et al's Roth 1, nw nw se 21-16s-18w, td 260 ft, est 15,000,000 cf gas. Duee & Brouk's Lebsack 1, se se ne 13-16s-16w, ru.

RUSSELL COUNTY—S. A. Murphy et al's



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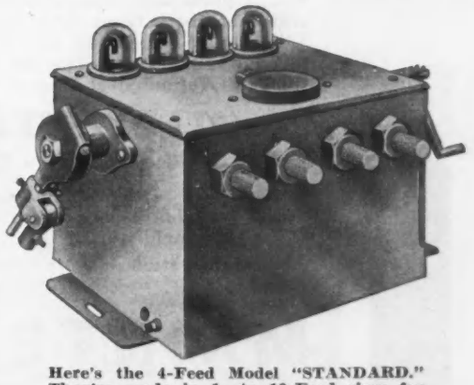

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"STANDARD" LUBRICATORS

Deines 1, se se sw 36-15s-15w, fsg 1910 ft. Goldstein & Vernon O&G Co.'s Steinert Estate 1, ne se sw 34-15s-15w, spd and sd. Aylward et al's H. Jones 1, se se nw 22-14s-13w, br. Equity Gas Co.'s Harbauk 1, nw ne sw 19-13s-12w, sd 1500 ft.

SEDGWICK COUNTY — Cameron et al's Smith 1, sw se se 13-27s-15200 ft. Swearer et al's Thome 1, sw sw nw 19-28s-1w, td 3455 ft, sw 18 hrs, est 4 to 5 blrs full per hr. Roxanna Drlg. Co. et al's Woodman 1, sw nw sw 26-26s-1w, dr 2372 ft. Empire O&R Co.'s Kimel 1, nw nw nw 4-29s-2w, fsg 3880 ft. E. B. Shawver's Furman 1, sw ne se 24-29s-3w, dr 1310 ft.

STAFFORD COUNTY—Empire O&R Co.'s O'Conner 1, ne ne ne 17-24s-15w, dr to 4131 ft.

SUMNER COUNTY—Graham et al's Dawson 1, nw nw nw 4-33s-2w, sd 4212 ft. E. B. Shawver's Bryan 1, cw½ w½ sw 36-30s-2w, dr 3781 ft. The Texas Co.'s Harper 1, ne sw se 9-30s-3w, dr 3625 ft. Faulkner et al's Nevitt 1, ne nw ne 36-32s-2e, pb 2830 ft, 5000 gal A. Olson Drlg. Co. et al's Barr 1, se se se 8-34s-2w, td 4750 ft, D&A.

WOODSON COUNTY—Harper et al's Miller 1, nw ne se 10-24s-14e, dr 1100 ft. Katz et al's Guy 1, sw sw se 6-24s-15e, fsg 500 ft. Reed et al's Piper 1, nw nw se 19-23s-15e, td 1575 ft, est 10 bbls oil per day.

SOUTH LOUISIANA

ACADIA PARISH — Humble's Nordyke 1, Ebenezer prospect, 23-10s-1e, abn 10,056 ft.

CALCASIEU PARISH—D. & D. Oil Co.'s Lutcher Moore 1, nw of Starks, 1-8s-13w, fsh 8447 ft.

CAMERON PARISH—Magnolia's Albert Dobbertine 1, Johnson Bayou prospect, 9-15s-14w, dr shale 6498 ft. Southern Oil Co.'s State Maritime 2, 15s-10w, sd 2611 ft. Union Sulphur's Hebert 1, Big Lake area, 18-12s-8w, dr salt water sand 7582 ft.

EAST BATON ROUGE PARISH—Cavalier Oil Co.'s Elliott 1, n of Hope Villa, 3-8s-2e, ru.

EVANGELINE PARISH—Bel Cheney Springs Oil Co.'s Fee 1, 10-2s-1w, sd 2214 ft. Continental-Humble's Pardee Lbr. Co. 1, Reddell area, 18-4s-1w, dr shale and lime 8009 ft.

IBERIA PARISH—Jefferson Lake Oil Co.'s Lake Peigneur 414, Jefferson Island dome, 12s-5e, washing to bottom 6945 ft.

JEFFERSON DAVIS PARISH — Louisiana Crusader's I. Langley 1, Fenton area, 36-7s-5w, dr shale 6103 ft. Stanolind's Calcasieu National Bank 2-B, China prospect, 28-7s-3w, dk; same operator's United Life Insurance 1, Hayes prospect, 16-11s-5w, dr shale 9709 ft; same operator's Calcasieu National Bank 2, South Jennings area, 10-10s-3w, dk.

LAFOURCHE PARISH — Fohs Oil Co.'s State Long Lake 1, Bourg prospect, 65-17s-19e, dr shale 7654 ft. William Helis' City of New Orleans 1, Marchland prospect, 19-23s-23e, running geophones 7549 ft.

PLAQUEMINES PARISH—Gulf's State Bay Adams 1, in Bay Adams, 32-19s-28e, dr shale.

ST. BERNARD PARISH—Gulf's Lake Lery 1, Lakke Lery prospect, 28-14s-14e, dr shale 5908 ft. Southern Sulphur Co.'s State 2, in Lake Borgne, 38-14s-15e, sd 3180 ft.

ST. CHARLES PARISH—Amerada-Louisiana Land & Exploration Co.'s State Bayou Des Allemands 1, Black Prince Island prospect, 13-15s-20e, ru.

ST. LANDRY PARISH—Shell's Boagni 1, ne of Cankton in Bristol area, 48-8s-4e, fsh 7318 ft.

ST. MARTIN PARISH—Joe E. Lilly et al's R. Martin 1, Section 28 prospect, 32-10s-7e, dk. The Texas Co.'s State Mongouloi 3, Lake Moungouloi prospect, 14-10s-9e, dr shale 7726 ft; same operator's St. Martin Land Company 9, Henderson salt dome, 21-8s-7e, woc 8666 ft.

ST. MARY PARISH — Texas Co.'s State Bateman Bay 1, Morgan City prospect, 21-16s-12e, dr shale 8626 ft; same operator's Horseshoe Bayou 1, Wax Lake prospect, 40-17s-9e, dr shale 11,812 ft.

TERREBONNE PARISH—Humble's Elender 1, Houma Gas field, 23-9s-19e, dr shale 12,076 ft.

MONTANA

CARBON COUNTY — Bailey-Round Butte Oil Co.'s Government 2, csl ne se, fsg at 1260 ft.

PARK COUNTY—Ben W. Ryan's Burgess 1, se sw nw 28-2s-11e, dr 610 ft.

PONDERA COUNTY — Gordon Campbell's Hughes 1, nw ne nw 12-30n-4w, sd at 2505 ft with sulphur water in hole to 1400 ft.

OKLAHOMA

ALFALFA COUNTY—Olson Drlg. Co. et al's Acre 1, csw ne 14-24n-11w, (owdd, otd 7332 ft), bailing at 3600 ft.

ATOKA COUNTY—A. J. Sanders' Redden 3, se sw sw 19-1n-5e, td 1260 ft, sd.

BECKHAM COUNTY—Mid-American Oil Co.'s Biscoe 1-A, sw sw sw 28-8n-22w, dr 1272 ft.

CADDO COUNTY — Clyde Beck et al's Pharris 1, cse se nw 24-6n-12w, der; tools on ground.

CLEVELAND COUNTY — Hollenback's Stinson 1, nw nw ne 17-9n-2w, dr 4025 ft.

COMANCHE COUNTY — C. V. Morris' Young 1, se ne se 24-3n-10w, dr 985 ft. C. Holliday's Kuntz 1-A, cse ne se 21-4n-11w, reaming 2338 ft.

CREEK COUNTY—Commercial Oil Co. et al's Hall 1 (was Sherry's Childers 1), sw sw ne 2-15n-7e, dr 4020 ft. M. W. Mosier et al's Holcomb 1, se sw ne 19-18n-8e, fsg 2935 ft.

GARFIELD COUNTY — Arab Oil Co.'s Harkendorf 1, ne ne ne 34-20n-3w, dr 5769 ft. Ohio Oil Co.'s State 1, sw sw sw 13-23n-2w, dr 1470 ft.

GRADY COUNTY—Western White Lily Oil Co.'s Stover 1, cse sw nw 33-3n-7w, dr 2758 ft.

GREER COUNTY—Nelf - Godfrey - Andrea's Melton 1, cse nw se 16-3n-22w, der; tools on ground.

HASKELL COUNTY—Continental Oil Co.'s Anderson 1, sw se ne 33-8n-20e, rur.

HUGHES COUNTY — Wrightsman's Diamond 1-A, se ne ne se 3-9n-9e, pb 3420 ft, woc.

JACKSON COUNTY — Ace Gutowsky's Howard 1, sw sw nw 10-3n-19w, lcn.

JEFFERSON COUNTY—Buffalo Oil Co.'s Crown-Over 1, cse se nw 21-6s-6w, td 2336 ft, ur csg. Gulf Oil Corp.'s Woodworth 1, cnw nw ne 20-3s-4w, dr 1450 ft. Olson, Heenan & Coe's Rose 1, csw sw 1-5s-5w, rur. Massad & Swansberger's Barrett 1, ne se se 14-6s-6w, dr 1800 ft.

KAY COUNTY—G. A. Brown et al's Harris 1-A, sw sw ne 14-25n-1e, sd.

KIOWA COUNTY — Kiowa Oil Corp.'s Finder 1, csw ne 4-6n-20w, sd. Argus Pet. Co.'s Osbourne 1, nw nw ne 9-7n-16w, td 1240 ft, sd for csg.

LATIMER COUNTY—Clark Drlg. Co. et al's Wilson 1, cse se 15-5n-18e, td 4572 ft, sd.

LINCOLN COUNTY—Anderson - Prichard's Colon 1, nw se sw 28-17n-4e, 2000 gal A; 180 bbls oil load; WOA. Mid-Continent Pet. Corp.'s Logan 1-A, ne ne se 31-11n-5e, dr 4775 ft.

LOGAN COUNTY—Helmerich & Payne et al's Rusk 1, cne se 9-19n-2w, td 5442 ft, D&A. Anthony & Marshall's Fruin-Eckman 1, se se sw 4-16n-1e, sd. Helmerich & Payne et al's

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Randall 1, sw sw nw 24-16n-1ww, rur. Eason Oil Co.'s Sisters 1, sw sw sw 24-17n-1w, dr 1732 ft.

LOVE COUNTY—Sinclair Prairie's Stockton 1, se se sw 26-6s-2w, fsg 5288 ft. Sadson-Wells-Pierson's Key 1, cse se nw 6-8s-1w, td 3183 ft, sd. Amerada & Stanolind's Westheimer & Daube 1-A, sw se sw 27-6s-2e, td 7363 ft, pb 2790 ft, dr out, hole open.

LeFLORE COUNTY—McGraw et al's Tidwell 1, cnw 17-3n-22e, ur 8-in csg.

MARSHALL COUNTY—Stewart & Taylor's Chestnut 1, ne ne ne 23-8s-5e, p 18 bbls oil and 40 bbls wtr, 18 hrs.

MURRAY COUNTY—Russell's Fee 1, se nw se 9-2s-3e, sd 1586 ft. Power Oil Co. et al's Lancaster Trust Co. 1, csw ne 10-1s-2e, sd. O. O. Owens' Fryer 1, ne se ne 34-1s-3e, dr 40 ft.

NOBLE COUNTY—Lincoln Oil Co. et al's Neil 1-A, ne ne ne 15-23n-2w, dr 4215 ft.

OKFUSKEE COUNTY—Mid-Continent Pet. Corp.'s Gofford 1, ne ne nw 35-12n-7e, cor 3845 ft.

OSAGE COUNTY—Norbla Oil Co.'s No. 1, ne ne se 13-23n-6e, rig and rust. Bay Oil Corp.'s No. 1, nw nw nw 35-24n-7e, dr 1960 ft.

PAYNE COUNTY—H. F. Young's Jenkins 1, se ne se 4-17n-3e, dr 4595 ft. Riddle's Van Zandt 1, nw nw se 16-18n-3e, br.

PONTOTOC COUNTY — E. H. Moore's Muse 1, sw ne se 33-2n-7e, testing. Southern Oil Co.'s Young 1, ne ne se 17-3n-7e, C&P.

POTTAWATOMIE COUNTY — Champlin Ref. Co.'s Buckler 1, se ne ne 7-6n-4e, td 4783 ft, D&A.

PUSHMATAHA COUNTY—Erle Halliburton et al's Bogwell 1, sw ne ne 30-3s-15e, td 1293 ft, sd.

SEMINOLE COUNTY — Hudson et al's Tanyan 1, se se sw 32-10n-7e, td 4632½ ft, D&A. Sinclair Prairie's Rossanna 1, nw nw sw 28-10n-8e, td 4187 ft, testing. J. E. Hall et al's White 1, se nw se 30-6n-8e, bailer stuck. Amerada & Stanolind's Reed 1, se sw se 19-10n-8e, dr 1972 ft. A. I. Spears' Keaton 1, nw nw nw 6-5n-8e, rur.

STEPHENS COUNTY—Edward's Frederick 1, ne se nw 31-2n-8w, td 2754 ft, sd. Carter Oil et al's Harley 1, cne ne 24-2s-4w, dr 4493 ft. Wm. Angle et al's Posey 1, cnw nw 8-1n-8w, sd 5504 ft, contr depth. Helmerich & Payne's Graham 1, csw sw ne 12-1n-5w, recementing. Ed Parson's Olson 1, csw sw 21-2n-8w, td 7002 ft, testing. B. F. Lundy's Calmes 1, cnw sw se 35-1n-4w, dr 3275 ft. Penn State Oil Co.'s Cole 1, cw½ sw ne 21-2n-8w, dr 3000 ft. Chas. Newsom's Pfile 1, sw sw sw 1-2s-7w, sd.

TEXAS COUNTY—Cabot Carbon Co.'s Castro 1, cnw 19-3n-17ecm, pb. Missouri Valley Gas Corp.'s Fitzgerald 1, C sec 17-6n-14ecm, set 10-in csg 673 ft, dr 2257 ft. Cabot Carbon Co.'s Calvert 1, C sec 14-3n-16ecm, td 2540 ft, woc.

TILLMAN COUNTY—I. T. I. O. Co.'s Hatler 1, csw ne 32-2s-17w, testing. D. S. Smith's Hammill 1-A, ne nw nw 6-5s-15w, fsg 2425 ft. Magnolia Pet. Co.'s Brown 1, csw se ne 21-3s-18w, der, mit.

WASHITA COUNTY—McWhirter et al's Fee 1, sw sw sw 34-8n-19w, dr 1779 ft.

SOUTH TEXAS

SAN ANTONIO DISTRICT

ATASCOSA COUNTY — Heirholzer Bros.' Fee 1, J. Pointevent sur 5, td 509 ft, temp abnd. J. R. Hinton's G. F. Weigand 2, A. S. Donivan sur, temp abnd until work begins. Helvetia Oil Co.'s Susie Pratt 2, F. de la Garza sur, still testing, pb/td 2432 ft. R. J. Roberts & W. Earl Rowe's J. M. Elder 1, Dan Brister sur 190, td 3160 ft, trying to recover drill stem.

BASTROP COUNTY—J. L. Collins Co.'s W. T. Turner 1, A. Litton sur, d & a, top serp 1756 ft, td 2003 ft.

BEXAR COUNTY—Algra Oil Co.'s Edward G. Peters 1, Miguel Gotari sur, dr 700 ft. American Gas Co.'s Oliver 5, M. F. Rodriguez sur, still sd 3425 ft. W. D. Bacon et al's Ida Mae Seffel 1, Jose Arocha sur, clearing hole to dd, td 1775 ft. L. K. Oil Co.'s J. F. & F. X. Bilhartz 1, F. Rolen sur 48, still sd, td 40 ft. J. O. Williams' C. Hoch Est. 1, Jose M. Baerrera sur 58, will start dr, td 483 ft.

BLANCO COUNTY—E. L. Nixon's H. Hohenberger 2, Adolph Jonas sur, sd 890 ft.

CALDWELL COUNTY—J. R. Brinkley Jr. Oil Co.'s Mrs. A. C. Bridges 1, Solomon Seal sur, temp abnd 2246 ft; W. F. Trammell 2, Robt. H. Hunter sur, dr chalk 2125 ft. E. R. Cosby's W. H Cosby 1, Maxwell sur, dr Buda 1700 ft. Kay Oil Co.'s N. L. Dunlap Est. 1, Solomon Seal sur, dr 2012 ft. McNeil Pet. Corp.'s Will Clark 1, J. R. Miller sur, lcn. Sherman Nelson's A. B. Etheridge 1, Thad Hunter sur, abnd in Edwards, tested sul/wtr. H. F. Sackett & M. J. Keoughan's J. E. Cardwell 1, Jno. P. Bell sur, dr 1525 ft.

DIMMITT COUNTY—Porter & Connor's K. Tideman 1, S&GNRR sur, prep to start operations. Wilcox Oil & Gas Co.'s Light Ranch 1, I&GN sur, dr 4450 ft.

EDWARDS COUNTY — Dan Auld's Mrs. Mamie Rigsby 1, GC&SF sur, dr 1100 ft.

FRIO COUNTY—Amerada Pet. Co.'s No. 1 Mrs. D. D. Harrigan 1, Salvador Flores sur,

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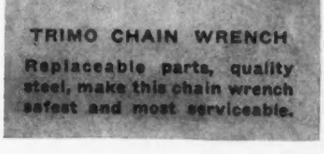
Accepted as standard throughout the oil fields because it has demonstrated greater strength, safety and economy. Made throughout of Chrome Molybdenum Nickel Alloy Steel; drop forged; jaws grip harder; wrench lasts longer.



TRIMO CHAIN WRENCH
Replaceable parts, quality steel, make this chain wrench safest and most serviceable.

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surface pipe parted trying to get on btm, td 6290 ft.

GONZALES COUNTY—Canoe Creek Oil Co.'s W. L. Boltz 1, W. A. Matthews sur, wor.

GUADALUPE COUNTY—Blackmer et al's Cora & J. E. Mackey 1, James Hodges sur, dr 1700 ft. J. E. Clark's T. C. Anderson 1, Robt. Hall sur, d & a, top chalk 2223 ft, td 2545 ft. Diamond Half Oil Co.'s E. Bibbs et al 1, Joel W. Robinson sur, td 5510 ft, ran electric formation tester 30 ft snd in Navarro about 1300, pb & setting casing, td in Trinity and Schist. Kennedy & Crowley's Gus Jahns 1, Jose K. Davis sur, bailing, showing some oil, td 2507 ft. Ogdne & Reed's Martin Hoffman 1, Green Dewitt sur 11, dk. Riddle Oil Co.'s Ned Herff 1, Eligio Gortari sur, sd after cementing lined, td below 2200 ft. W. Scott Townsend's Tom Terrill 1, Jesus Cantu sur, moving in new boiler to dd, td 300 ft.

HAYS COUNTY—R. D. Kelly's W. P. Donalson et al 1, J. Vermandi gr, redr 890 ft.

KERR COUNTY—S. W. Forrester's J. W. Bailey 1, A. L. Starky sur, dr 1100 ft, top Ellenberger 1065 ft.

LEE COUNTY—James E. Pederson's C. A. Turner 1, David Hudson sur, sd 6560 ft.

MEDINA COUNTY—Frank A. Brown's Jack Bilhartz 1, J. Campbell sur, owdd td 200 ft. C. J. Webster O. & G. Co.'s Wm. H. Weimers 1, Joseph Haley sur 32, still no water.

MILAM COUNTY—Alex Krause et al's J. F. Bartek 1, Josea de Pena sur, sd 1175 ft.

REAL COUNTY—Sun Oil Co.'s Dietert & Oppenheimer 1, GWT&PRR sur, dr 5678 ft, electric formation tester corrected td.

TRAVIS COUNTY—R. M. Kyle's W. D. Hunter 1, J. Burleson sur, lcn.

ZAVALLA COUNTY—H. F. Wilcox's T. J. Gillam 1, GWT&TRy sur, dr 2890 ft.

LAREDO DISTRICT

DUVAL COUNTY—Atlantic Refining Co.'s W. A. Lowe 1, sur 466, abnd 4516 ft. Argo Royalty & John Clopton's Smith-Corkill 3, sur 498, dr 1800 ft. A. J. Brinkoeter's P. Garza de Rodriguez 1, sur 212, comp 4 bph on pump, td 2657 ft; P. Garza de Rodriguez 2, sur 212, ru. Clark & Cowden's Drlg. Corp.'s J. M. Richardson 3, sur 5, dr 3069 ft. Diamond Half Oil Co.'s J. F. Sinclair 1, Elizabeth Gravis sur, abnd 3010 ft. Frank Gravis' F. Vaello Puig 1, Andres Garcia Heirs sur, comp flowing approx 12 bbls per hr, ⅛-in choke, 45 gravity, tp 750 lbs, cp 950 lbs, td 4755 ft. H. F. Grimm's Elizabeth Mew 1, sur 289, making dst showing oil td 4400 ft. Henshaw Bros. et al's W. H. McGuffin 1, sur 230, SK&K, d & a 3806 ft. Hiawatha O. & G. Co.'s Southland Life Ins. Co. 2, Ball Ranch subd, Santos Flores gr, coring 5079 ft. Humble O. & R. Co.'s Roos Bros. 1, sur 119, lcn. Kepley Prod. Co.'s Clara Driscoll Sevier 2, sur 71, lcn. Penn-Palangana Oil Co. et al's C. K. Gravis 1, sec 250, pits, wor. Reynolds & Richardson's D. Ruiz Est. 1, sec 125, dr. Thomas Est. & Lockhart Bros.' Lillian (Atlee) Parr 1, E. H. Valentine sur, flowing 5 bph 58 gr oil, ¾-in choke, tp 1450 lbs, cp 1750 lbs, high gas/oil ratio, td 4672 ft. W. H. Wollett & M. D. Mastin's Bishop Cattle Co. 1, sur 74, lcn.

JIM HOGG COUNTY—Cole Pet. Co.'s Yeager Ranch 1, sur 452, snd 2008 ft to 2012 ft, dry, dr 2211 ft. Gifford Oil Co.'s & Locke Purnell's E. L. Armstrong 2, sur 43, dr 3240 ft. Sylvan Price's Maryland Trust Est. 1, sur 314, ru.

LA SALLE COUNTY—W. H. Vernor's M. G. Jeffries 1, HE&WTRR sur, temp abnd 860 ft.

McMULLEN COUNTY—Big Rock Oil Corp.'s Henry R. Martin 1, Emil N. Weiting sur, ds 525 ft. H. K. Boysen's J. E. Murphy 1, J. E. Murphy sur, dr 1500 ft, top cole 1425 ft. Howell Oil Co.'s J. H. Martin Hrs. 1, sur 213, dr 655 ft. Edwin M. Jones' Harry Ezzell 3, Thos. Adams sur, td 1265 ft, closed well. L. J. Snyder et al's B. C. Claunch 1, M. Hely sur, test on pump showed considerable oil and very little sw, sanded up, prep to pull rods and rework, td 1058 ft.

STARR COUNTY—John H. Clopton et al's Dionicio Tijerina 4, blk 12, por 80, dr 1590 ft. Cook, Maris, Arnold's Starr County Cattle Co. 2, Cook, Maris, Arnold sur, sd, laying new gas line, td 900 ft. Danrey Oil Co.'s Cayetano Ramos 1, sur 150, dr out after recementing, td 1280 ft. W. F. Dolgener et al's Y. Garciade Garcia 1, por 71, J. of Mier, dr 327 ft. Glen Harroun et al's V. C. Guerra 1, tr B, Frank R. Campbell sub, abnd 3003 ft. A. A. Kelley's Higinio Gonzalez 1, por 71 J. of Mier, temp abnd 356 ft. Henry Mode et al's Kelsey Bass 1, Kelsey Bass sub, por 86 & 87, ru. Moss & Heard's S. B. Ricaby 2, por 83, J. of Camargo, wshg down 1390 ft. F. P. Schwab & Fred Foster's Antioco Munoz et al 1, Tavali gr, lcn. Transwestern Oil Co. et al's T. B. Slick Est. 2, sec 527, dr 4065 ft.

WEBB COUNTY—Mills Bennett Prod. Co.'s M. D. Slator 2, blk 89, Mission Oil Co. sub, dr 2060 ft. Bolling & Coffey's A. Villareal 1, blk 17, sur 768, pits & wor. Eugene Garner Jr.'s R. Saldivar 1, sur 657, swabbed dry 1001 to 1006 ft, took core, showed sw, now dr ahead 1056 ft. Kepley Prod. Co.'s W. C. Billings 1, sur 6, dr 1500 ft. O. W. Killam's Garcia & Villareal 1, sur 1099, dr 1000 ft; Laurell Bros. 1, sur 333, comp on pump, est 3 bph, still making a little wsh wtr from Mirando snd 2031-35 ft. LuTex Oil Co.'s Lone Star Con. Co. 1-A, blk 25, SS&B sub, por 12-13-14, coring snd 2300 ft. J. W. Magee's E. Garcia 1, Henry James subd, Garcia tr, J. V. Borrego gr, moving in rest of rig, td 40 ft. Ohio Fuel Supply Co.'s Duval County Ranch Co. 2, sur 100, d & a 2003 ft.

ZAPATA COUNTY—W. C. Bob's J. M. Martinez 2, W. R. Duke sub, Charco Redondo gr, sd 672 ft. Evans, Mims & Long Bros.' M. Garza Est. 1, C. A. Douglas sub, Zorro Ranch Comitas gr, coring 1100 ft. H. Q. Lewis' S. Benavides 1, blk 39, Fansler & O'Hern sub, Villa gr, snd 1451-1471 ft, dry, coring 1600 ft. Lundell Prod. Corp.'s I. Ramirez 1, blk 25, Chittenden sub, sh 1, porc 18, dr 200 ft. Westheimer & Daube's E. Lopez 1, sur 288, lcn.

CORPUS CHRISTI DISTRICT

ARANSAS COUNTY—Barnsdall Oil Co.'s Kate Edwards 1-A, Wm. Lewis sur, dr below 7600 ft, no rec on 3 3-ft cores 7460-69 ft. Wheelock & Collins' Wheeler 1, W. S. Tuton sur, abnd 7020 ft.

BEE COUNTY—D. D. Feldman's G. F. Shaw 1, sec 18, Uranga gr, dr 3920 ft. Lonnie Glasscock's J. B. Ablinger 1, John Ryan sur, dr 5710 ft. W. D. Walton et al's A. M. Holzmark 1, J. A. York sur, d & a, dst mud & no pressure Pettus 4227-37 (8 ft snd), Yegua 4261-83 ft, showed sw on dst.

BROOKS COUNTY—Standard Oil Co. of Texas' Mestina O. & G. Co. 1, R. G. Salinas sur, dr dst 1915-44, show 200 lbs pressure 10 min, td 2067 ft.

CALHOUN COUNTY—Hiawatha O. & G. Co.'s John Roemer 1, Oliver H. Stapp sur, fshg for dr stem 8470 ft.

CAMERON COUNTY—Stapper Pet. Corp.'s Port Isabel Irr. Co. 1, Espirito Santo gr, blk 17, Port Isabel Irr. Co. subd, dr 6930 ft.

GOLIAD COUNTY—Brown & Wheeler's J. R. Kauffman 1-G, P. Trevino sur, set sur csg. Goliad Oil Co.'s S. E. Cole 1, lot 33, range 4, Goliad Town gr, dr 1825 ft.

HIDALGO COUNTY—Daskam Bros.' Osca Daskam 2, por 45, lot 14-A, drlg 1275 ft. Dayle L. Smith Oil Co.'s Fairbanks & Young 1, blk 14, porc 46, ds 2350 ft. Sterling O. & R. Corp.'s John C. Engelman 1, MTL&I Co. sub, blk 95, flowing 5 bbls per hr distillate, tp 3050 lbs, cp 3300 lbs, ¼-in ch, td 8012 ft.

JACKSON COUNTY—Cockburn Oil & T. Hargrove's Santa Theresa Farms 1, I&GN sur, secured 30-day extension.

JIM WELLS COUNTY—John Camp Prod. Co.'s J. W. Bird 1, Los Presenos de Abajo gr, ru. Magnolia Pet. Co. et al's A. A. Seeligson 7, los Jaboncillos sur, pits dug. H. J. R. O. & G. Co.'s Lem Allen et al 1, tr 2, blk B, Bode sub, drk up. Tsesmelis & Reese's Martha Earhart 1, John Suggs sur, coring 3660 ft. Wellington Oil Co.'s Clara Driscoll Sevier 1, La Anima Sola gr, ab 545, drlg wtr well, wor.

KARNES COUNTY—Degraffe & Reele's Cochran 1, McConnell league, sd 1307 ft. Victoria Drilling Co.'s John Yanta 1, S. G. Hardaway sur, resuming operations, td 1575 ft.

LIVE OAK COUNTY—R. H. Feltner's Sanger Ranch 2, GC&SF sur, sp. F. D. Salter et al's J. W. Griffith 1, J. D. Osborne sur, woc 903 ft.

NUECES COUNTY—I. J. Allen & Seaboard Oil Co.'s J. O. Chapman et al 7, sec 38, woc at 1250 ft; J. O. Chapman et al 1-B, sec 37, dr 5696 ft. Camp Prod. Co.'s C. Phillip Wardner Tr. 1, sec 12, set 5½-in csg & cemented at 6111 ft, gas & gasoline snds logged at 6104-08 ft, 5796-5806 ft, 5618-27 ft, 5244-46 ft and 4706-16 ft, latter snd showing 400 lbs pres & 1 joint of gasoline on dst, td 6715 ft. Clarkwood Oil Co.'s H. B. Baldwin 1, blk 11, Russell Farm Lots, dr 3500 ft. Lonnie Glasscock's Kansas Life Ins. Co. 1, Luciano Rivers sur, ab 287, prep set sur csg. Heyser & Heard's A. J. Kosar & Snyder 1, J. M. Cody sur, sh 3964 ft. Shell Petr. Co.'s State of Texas 1, Laguna Madre Bay, piling driven & sd. Sloan-Harvey & Green River Oil Co.'s Eno Cassens 1, sec 26, sp & sd. Southern Minerals Corp.'s Richard King 1,

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You'll enjoy our delicious
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sec 32, King Farm Lots, coring 5850 ft. United Prod. Corp.'s W. H. Harvey 1, Garcia sur, dr 8111 ft. Wellington Oil Co. & Seaboard Oil Corp.'s L. M. Duggar 1, sec 125, Geo. H. Pauls subd, coming out of hole w/core, td 3547 ft.

SAN PATRICIO COUNTY—Conroe Drilling Co.'s T. A. McKamey 1, blk M, Pauls subd, coring (?), reported to have run electric formation tester after encountering oil show about that level, td 5325 ft. Phillips Pet. Co.'s Henry Schmidt 1, sec 81, Pauls subd, flowing 8 bph, 60 percent 34 gr. oil, 40 percent wsh wtr, 5/32-in ch, tp 1520 lbs, cp 2125 lbs, perf 5336-38 ft. Wheelockk & Collins' Inez Willis 1, lot 3, blk E, Gregory subd, dr 5017 ft.

WILLACY COUNTY—Ruez-Morton Inc.'s Francisco Armendiaz 1, Little sh 4, San Juan de Carricitos gr, sd 650 ft; Johnson-Stillman 1, sd 650 ft. Shell Pet. Co.'s Yturria Land & C. Co. 1, coring hrd sh & sand stone 8870 ft.

TEXAS GULF COAST

AUSAIN COUNTY—R. L. Hopkins & J. T. McGregor et al's Reineche 1, se of Bellville, J. Stephenson sur, dr rock 120 ft.

BRAZORIA COUNTY — Pure's Slade 1, Peach Point prospect, S. F. Austin sur, abstract 20, dr shale 7129 ft.

BRAZOS COUNTY—Francis Stone Oil Co.'s Graham 1, s of College Station, R. Stevenson sur, dr shale 2256 ft.

CHAMBERS COUNTY—Sun's White Estate 1-B, Seabreeze area, Wm. Mays sur, abn 9637 ft.

FT. BEND COUNTY—Research Oil Co.'s Moore 1, ne of Orchard, S. Kennedy sur, dr shale 2345 ft.

HARRIS COUNTY—H. J. De Arman's TTyrell & Garth 1, Cedar Bayou prospect, L. Hemingway sur, dk. H. M. Harrell & O. L. Brace's Bullock 1, ne of Ogburn area, C. Bowman sur, abn 7004 ft. Stanolind's Oates 1, Clinton area, C. Martinez sur, woc 8783 ft. Texas Gulf Prod. Co.'s Gillespie 1, Aldine area, S. Contreras sur, swabbing 7100 ft.

JEFFERSON COUNTY—Magnolia's Phelan 1, sw of Amelia in Cheek area, S. Stivers sur, dr lime 6148 ft. Humble's Jefferson Land Co. 1, Cheek area, C. Hillibrand sur, abn 8458 ft.

LIBERTY COUNTY—Jack Frazier's Hanchey 1, Hardin area, H. B. Johnson sur, dk.

MATAGORDA COUNTY — Continental's Robbins 2, Citrus Grove prospect, C. Franz sur, washing to bottom 10,363 ft. Continental's Hawkins 2, Sheppards Mott, D. McCarthy sur, mim. Sun's Craig 2, Hawkinsville area, J. Williamson sur, reaming 5460 ft. United North & South Development Co. (Receivers), Stoddard 1, sw of Buckeye, Cotton sur, dr shale 9496 ft.

POLK COUNTY—C. E. Gates' Jackson 1, se of Onalaska, E. Clark sur, dr shale 2908 ft. Mayo et al's C. Mayo 1, w of Segno, J. G. Loving sur, running an electrical logging device 5101 ft.

SAN JACINTO COUNTY—Cockburn et al's Whitten Estate 1, Keno area, Wm. West sur, lcn.

TYLER COUNTY—Republic's Hurd 2, N. Hurd sur, dr shale 7580 ft.

WALLER COUNTY—N. Blumenthal's Kelly 1, ne of Hempstead, S. Hardin sur, abn 4758 ft. Red Bank Oil Co.'s Chapman 1, n of Hempstead, M. Donohoe sur, dr sand and shale 1245 ft. Stanolind's Hargrove 1, Katy area, T. S. Reese sur, sec 110, dr shale and lime 2365 ft.

WHARTON COUNTY — J. F. Hutchin's Wensley 1, J. Tomlinson sur, abn 5472 ft. Texas Co.'s Kluck 1, Blue Basin prospect, J. Hyland sur, comp dry gas well, 4657 ft.

UTAH

EMERY COUNTY—Continental & California's Unit 1-A, nw nw 27-23s-11e, resuming at 1610 ft.

GRAND COUNTY—Columbia Crude Corp.'s Rath-Government 1, ne sw 12-25s-20e, dr plug at 2132 ft and preparing to test so. Utah-Southern Oil Co.'s Hyde-Government 1, s nw nw 32-22s-20e, sd 6715 ft for heavier equipment.

WYOMING

LINCOLN COUNTY—H. M. Eller et al's 2, e nw sw 32-19n-116w, dr 411 ft, no report on test of so at 397-401 ft.

NATRONA COUNTY—Summitt Oil Co.'s Government 1, se ne nw 21-33n-80w, dr 1870 ft.

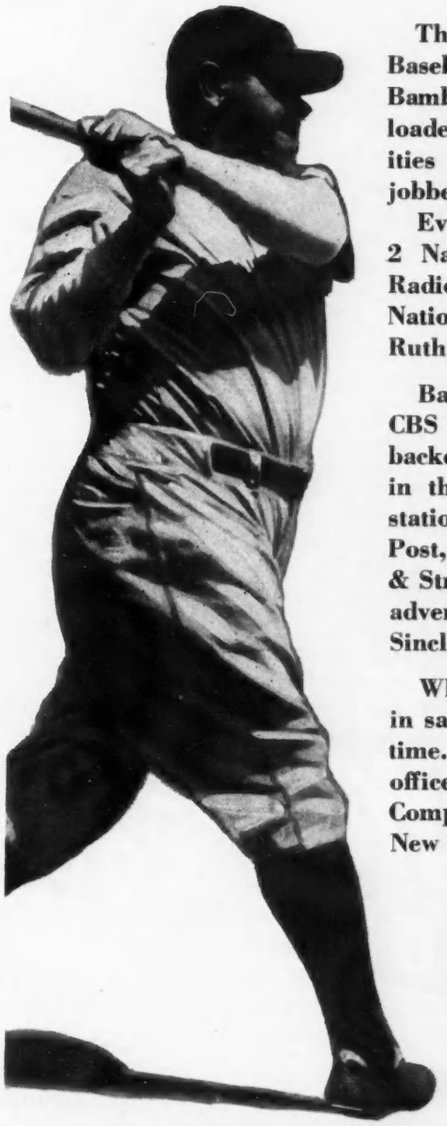
NIOBRARA COUNTY—Riggs Drilling Co.'s A. A. Spaugh 1, se sw sw 32-34n-65w, dr 1435 ft.

PARK COUNTY—General Petroleum Corp.'s Government 1, nw nw nw 33-47n-100w, coring 5856 ft.

Steam-Driven Compressors

Worthington Pump and Machinery Corporation, Harrison, New Jersey, recently issued an attractive catalog describing its opposed type steam-driven compressors.

Babe Ruth at bat!
with the bases loaded!



The great Sinclair-Babe Ruth Baseball Contest is on. The "Big Bambino" is at bat. The bases are loaded—loaded with sales opportunities for every Sinclair distributor, jobber and dealer. And here's why:

Every week Sinclair is giving away 2 Nash 8's, 20 RCA Victor Auto Radios, and 500 Spalding Official National League Baseballs, "Babe Ruth autographed".

Babe Ruth broadcasts over 61 CBS stations, twice each week . . . backed by 11,500 billboards in May in the vicinity of Sinclair dealers' stations . . . ads in Saturday Evening Post, Time, Collier's, Life, and Field & Stream . . . newspaper and movie advertising . . . colorful displays for Sinclair dealers.

Why don't you let Babe Ruth bat in sales for you, too? There is still time. 'Phone your local Sinclair office or write to Sinclair Refining Company (Inc.), 630 Fifth Ave., New York City.

SINCLAIR

Babe Ruth broadcasts twice each week over 61 Columbia network stations in a new Sinclair radio program.

CLARK Super-2-Angle Compressor — 2, 3, 4 and 6-Cylinder Sizes, 200 to 600 H. P.

CLARK SUPER-2-ANGLES Save Money 5 Ways YET GIVE EQUAL POWER!

The New CLARK Super-2-Angle Compressor is introducing an entirely new standard of LOW COSTS in gasoline plant installation and operation. This unit equals any other type of compressor in power and efficiency, but effects substantial savings in 5 important ways—as follows:

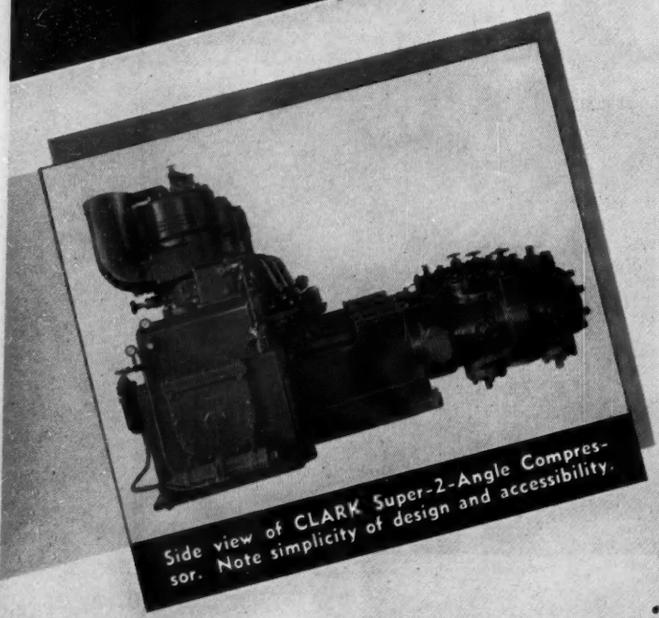
1. **CUTS TRANSPORTATION AND ERECTION COSTS because shipped practically assembled.**
2. **SMALLER FOUNDATION due to compact right-angle design.**
3. **LESS FLOOR SPACE, SMALLER BUILDING.**
4. **SAVES FUEL, due to CLARK Super-2-Cycle Fuel Injection.**
5. **LOWER MAINTENANCE due to extreme simplicity of design and few parts.**

Engineers throughout the industry are investigating, and important installations are already being made from coast to coast. Write for details or

See CLARK Section, 1937 Composite Catalog

CLARK BROS. COMPANY . . . Olean, New York, U.S.A.

Export Office: 30 Rockefeller Plaza, New York. Midcontinent Sales Offices and Warehouses: Tulsa, Okla., and Houston, Texas. West Coast Office: Smith-Booth-Usher, 2001 Santa Fe Av., Los Angeles, Cal. Foreign Offices: 72 Turnmill St., E. C. 1, London, England; 4 Str. General Poetas, Bucharest, Roumania.



Side view of CLARK Super-2-Angle Compressor. Note simplicity of design and accessibility.

CLARK

NEW PRODUCTS FOR THE FIELD
Machinery • Tools • Catalogs • Books

ELECTRICALLY-OPERATED FLOW METER
Bailey Meter Company

Bailey Meter Company, 1050 Ivanhoe Road, Cleveland, Ohio, has anounced development of a new electrically-operated flow meter known as the Synchro-Meter. Basically, the Synchro-Meter consists of a transmitting unit operated by a Ledoux bell flow-measuring mechanism and a receiver consisting of the indicating, recording and integrating instruments. The transmitter is located at the point of measurement of the variable and the receiver is located at a place or places convenient for obtaining readings from the instruments.

A number of advantages are claimed for the new meter in that no adjustments are required at the transmitting end, which can be located in relatively inaccessible places, and that several receivers may be operated from one transmitter. Calibration of the transmitting system is said to be simple and permanent. Two scales, one on the transmitter and the other on the receiver, make it possible to test the transmitting system without calibrating the flow measuring element, and conversely to calibrate the flow measuring element without using the electrical system. In case of power failure, provision is made for automatically re-establishing the proper phase relation between the transmitter cam and the receiver cam so that the meter remains accurate under all conditions.

Exterior view of Indicating, Recording and Integrating Bailey Synchro-Meter Receiver

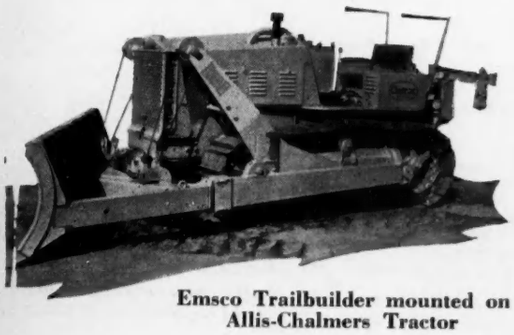
TRACTOR EQUIPMENT
Emsco Derrick & Equipment Company

Emsco Derrick & Equipment Company, 6701 South Almeda Street, Los Angeles, announces the addition of a complete line of cable- and hydraulic-controlled tractor equipment, bringing together a number of newly developed units and an established line of construction machinery, including bulldozers, trailbuilders, and power control units formerly produced by the Hutchins Winch Company and the new Emsco hydraulic equipment.

According to the manufacturer, all Emsco cable-operated trailbuilders and bulldozers are powered by the Emsco power control units, manufactured in both single- and double-drum types and built for all popular size track-laying tractors.

These power control units, it is claimed, are designed to add to the speed, efficiency and economy of the equipment they operate and embody very rugged construction, compact design and many engineering improvements. Both the cable-operated and hydraulic-controlled equipment have been thoroughly service-proved.

The manufacture and sale of the Emsco line of construction machinery—which includes rippers and scrapers in addition to bulldozers, trailbuilders, and power control units—has been placed in the hands of a special tractor equipment division of the Emsco organization.



Emsco Trailbuilder mounted on Allis-Chalmers Tractor

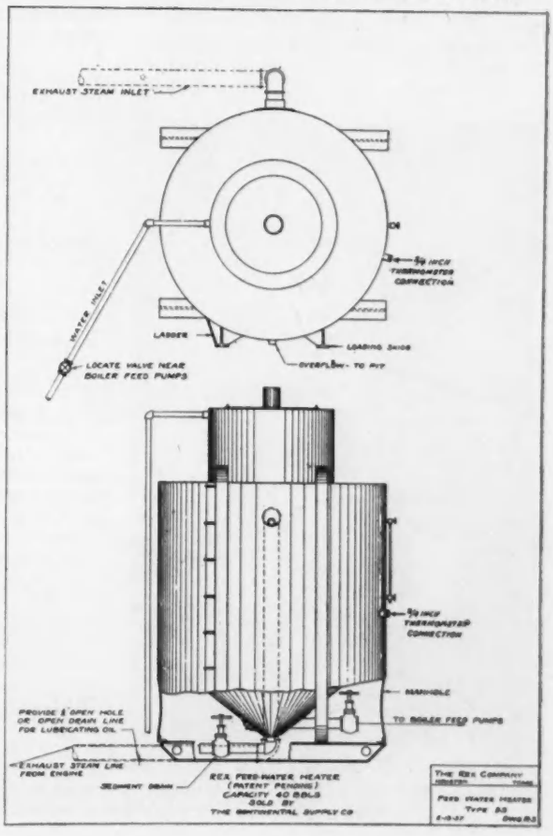
BOILER PRE-HEATER
The Rex Company

The Rex Company, Box 2431, Houston, Texas, has placed on the market, through Continental Supply Company, a new open type feed-water heater for use with oil field boilers. The manufacturer has designated this product as the Rex Pre-Heater, Type "DS," offering it in capacities of 40 barrels and 90 barrels.

According to the manufacturer, the pre-heater was designed not only to provide ample 200 to 210-degree boiler feed water, but, of even greater importance, to remove all sediment from the water before it is delivered to the boilers. It is claimed that by removing sediment in this manner, the boiler tubes will remain clean for a longer period, greatly increasing the efficiency of the boilers and reducing maintenance to a minimum. Provision is made for trapping and drawing off sediment that settles out of the water. Being an open-type heater, it liberates any oxygen dissolved in the water before it enters the boilers, thus eliminating the corrosive action of free oxygen on the boiler tubes.

The Rex Pre-Heater utilizes exhaust steam from the engines, transferring heat directly from the steam to the water. The accompanying illustration shows the simplicity of design and directions for installing the heater.

Rex Boiler Feed-Water Preheater


EXHAUST STEAM INLET
WATER INLET
LOCATE VALVE NEAR BOILER FEED PUMPS
LADDER
LOADING SKIDS
OVERFLOW - TO PIT
MANHOLE
TO BOILER FEED PUMPS
PROVIDE 1/8" OPEN HOLE OR OPEN DRAIN LINE FOR LUBRICATING OIL
EXHAUST STEAM LINE FROM ENGINE
SEDIMENT DRAIN
REX FEED-WATER HEATER (PATENT PENDING) CAPACITY 40 BBLS SOLD BY THE CONTINENTAL SUPPLY CO
THE REX COMPANY

This Week with the Industry's EQUIPMENT SUPPLIERS

Vernon Tool Company Appoints Gulf Coast Distributor

The Vernon Tool Company, Ltd., Los Angeles, announced recently the appointment of McNeely Materials Company, 2935 Jensen Drive, Houston, as Gulf Coast and Mid-Continent representative for the Vernon-McNeely vibrating rotary mud screen.

McNeely Materials Company is operated under the management of J. W. Neely, and the sales force includes R. J. Carlson, J. A. Durham and L. M. Prince. The company also handles a complete line of screens, motors, turbines, and is equipped to render a general service.

Ed. W. Smith Resigns as Sales Manager of Pittsburgh Steel

Pittsburgh Steel Company, Pittsburgh, has announced resignation of Ed. W. Smith as general manager of sales of the company. W. G. Hume continues as manager of sales, wire products, and C. V. Lally continues as manager of sales, seamless steel tubes. The office of general manager of sales will remain vacant.

J. K. Beeson, formerly assistant general superintendent of the company, has been appointed assistant manager of sales. He will have charge of the sale of semi-finished steel, pig iron and rods, and will assist Hume and Lally in the sale of wire and tubular products.

D. J. Henecker Promoted by Wickwire Spencer

D. J. Henecker has been appointed manager of the Wire Rope Sales Department of Wickwire Spencer Steel Company, succeeding R. H. Cherry, recently deceased.

Henecker has had an unusually wide and varied career in the sales and promotion of wire rope and steel products. After leaving school he served in France. At the close of the war he became associated with the Mercantile Marine, and Consolidated Steel Corporation.

In 1921 he joined the electrical and wire rope sales department of American Steel & Wire Company, in New York for 4 years and then in the south for 2½ years. After returning to New York City for a year in the wire rope sales promotion division, he was transferred to Buffalo in charge of wire rope sales for that district, and then back to New York City as assistant department manager of electrical and wire rope sales. In 1932 he joined the sales staff of Wickwire Spencer Steel Company as assistant district sales manager at Buffalo, assuming the managership of that district in 1934 where he has remained until his recent appointment.

D. J. HENECKER
Managing Wire Rope Sales for Wickwire Spencer

WALTER WELLS and ALEXANDER ANDERSON

The Lane-Wells Company recently purchased the business of Alexander Anderson, Inc. (See column 3.)

O. T. Dawson of Tulsa Dies at Kansas City

O. T. Dawson, 57, vice president of The National Supply Company of Delaware, died April 19 at Kansas City, Missouri. He had been ill three weeks.

A native of West Virginia, Dawson was born at Lost Creek in 1879. He went to Sedan, Kansas, in 1905 as an employe of The National Supply Company, and in 1907 was transferred to Peru, Kansas as company agent. He later was sent to Tulsa to do some field work for the company, but in 1909 was again sent to Kansas, this time to Independence, where he was placed in charge of the second-hand department of the firm. He returned to Tulsa in 1912 and spent the remainder of his time there. Survivors include his widow, a brother, L. D. Dawson of the Stanolind Pipe Line Company, and several brothers and sisters living in West Virginia.

The Lane-Wells Company Buys Alexander Anderson, Inc.

The Lane-Wells Company, Los Angeles, announces it has purchased Alexander Anderson, Inc., and that as soon as the necessary additions can be made to the new Lane-Wells plant a 5610 East Soto Street, Los Angeles, all plant and service equipment of Alexander Anderson, Inc., will be moved from Fullerton to the new location. No changes are to be made in the personnel of the Alexander Anderson organization, which numbers 58 people, but according to The Lane-Wells Company it will be expanded to keep pace with such demands as increased business may put upon it.

Anderson's well survey equipment, devices and patents, covering all phases of checking on the progress and completion of drilling wells, it is said, will round out the stratagraph and gun-perforating service now offered by The Lane-Wells Company.

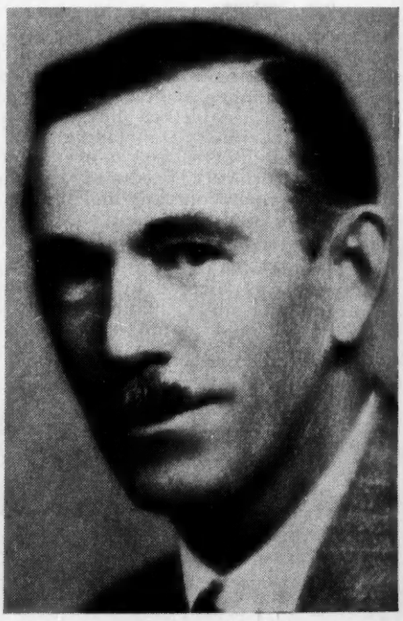
Anderson, it is announced, plans to devote his time to other intrests. The two companies are to operate as separate indentities for some time to come.

Linde Air Products Company Completes New Oxygen Plant

The Linde Air Products Company, unit of Union Carbide & Carbon Corporation, New York, N. Y., announces the opening of a new Linde oxygen plant on Powhattan Avenue, Essington, Pennsylvania, near Philadelphia.

Bruce Barkis Appointed Manager Field Operations for Lane Wells

The Lane Wells Company, Los Angeles, announces appointment of Bruce Barkis as manager of field operations. Barkis, formerly general field superintendent for Rio Grande Oil Company and more recently assistant production manager of Richfield Oil Company, has joined The Lane Wells Company's staff to provide advisory service. His appointment is in line with the expansion program that has been carried out by The Lane-Wells Company during recent months, according to Walter Wells, president of the company.



BRUCE BARKIS
Lane-Wells' new manager of field operations

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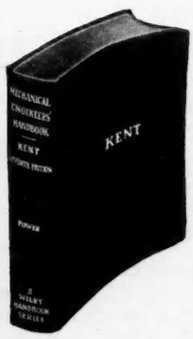

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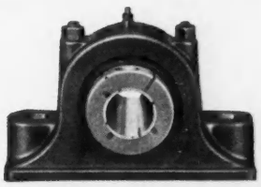

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MEDART

Squeaks from the Bull Wheel

Spring Has Come

"Why is a well-built girl like a three ring circus?"

"I'll bite. Why is she?"

"Because a man doesn't know where to look first."

Doubting Thomas

The one-ring circus was visiting a town in the hills. The folks there recognized all the instruments of the band except the slide trombone.

One old settler watched the player for quite some time, then said: "There's a trick to it; he ain't really swallerin' it."

Biting Sarcasm

A traveler said to the conductor of a slow American train: "Does this railroad allow passengers to give advice?"

The conductor replied, gruffly, that he guessed so.

"It occurred to me," said the traveler, "that it would be as well to detach the cowcatcher from the front of the engine, and bolt it on to the rear; for what is to prevent a cow strolling into this car and biting one of the passengers?"

Bad Case

"I sent my husband to the hospital because of his knee."

"Did he have water on it?"

"No; his private secretary."

Watch Closely

"Maggie," said Angus to his wife, "here's a ticket for tonight's conjuring show and when he comes to that part where he takes a teaspoonful o' flour and one egg, and makes twenty omelettes, watch vera close."

Gosh!

Barber: Was your tie red when you came in here.

Customer: No, it wasn't.

Barber: Gosh!

Craved Excitement

"Here, Aunt," said the returned traveler, "is a franc I brought you from Paris as a souvenir."

"Thank you," said the dear lady. "I wish you would have brought me one of the Latin quarters I read so much about."

Secretary's Delight

"I've an invention at last that will mean a fortune!"

"What is it this time?"

"Why, it's an extra key for a typewriter. When you don't know how to spell a word you hit that key, and it makes a blur that might be an 'e,' an 'a' or almost anything else you like."

Eternal Chaos

The surgeon, the lawyer and the politician, sitting over cocktails, were debating the value of their respective callings to the human race.

"You fellows make me tired," said the surgeon. "It was a surgical operation that gave woman to the world. Where would the human race have been without that?"

"All very well," said the lawyer, "but we brought the world into order out of chaos."

The politician swallowed hard for a moment, but his eye lit up and he said triumphantly:

"And where do you suppose chaos came from?"

Generous

Marine—"Say, Pal, will you loan me a nickel? I want to call a friend."

Sailor—"Here's 15 cents, call all your friends."

Naval Terms

"Good morning, Parson. Haven't seen you lately."

"No, captain. I've been busy. Only this morning I married three couples in fifteen minutes."

"Smart going, Parson. That's twelve knots an hour!"

Service!

A guest was awakened early by a knock on his hotel room door.

"What is it?" he called drowsily.

"A telegram, boss," came a Negro's voice.

"Well, can't you push it under the door without waking me up so early?"

"No, suh; it's on a tray."

Preparedness

Agent—Why do you want fire insurance on your husband? That won't be any help when your husband passes away.

Young Bride—It's so much cheaper, and you see, I intend to have him cremated.

Alluring

Author—May I have some further details about this magnificent estate you offer for sale?

Agent—Do you wish to buy it?

Author—No. But I think I can use your flowing description of it in my new novel.

That's What Lawyers Are for

"Are you the defendant in this case?" asked the judge.

"No, sah," replied the negro. "I'se got a lawyer to do mah defending; I'se de man what stole dem chickens."

Wise Johnny

Mother—Come here, Johnny. I have some good news for you.

Johnnie (without enthusiasm)—Yes, I know, father is home again.

Yes, but how did you know?

My bank won't rattle any more.

Repartee

As the majestic liner came into the harbor, a grimy coal barge floated immediately in front of her.

"Clear out of the way with that old scow," shouted an officer on the bridge.

A round sun-burned face appeared over the cabin hatchway.

"Are you the captain of that vessel?"

"No," answered the officer.

"Then speak to your equals," came from the barge. "I'm the captain of this."

Simple Enough

"Your wife is a very systematic woman, isn't she?"

"Yes, very. She works on the theory that you can find whatever you want when you don't want it by looking where it wouldn't be if you did want it."

Pests?

Guide: "And the stones I'm about to show you are covered with hieroglyphics."

Tourist: "Oh, isn't that too bad. At home we're bothered by grasshoppers."

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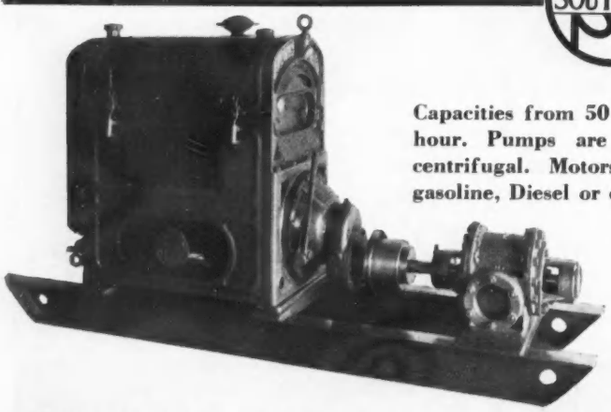

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SOUTHERN ENGINE & PUMP COMPANY

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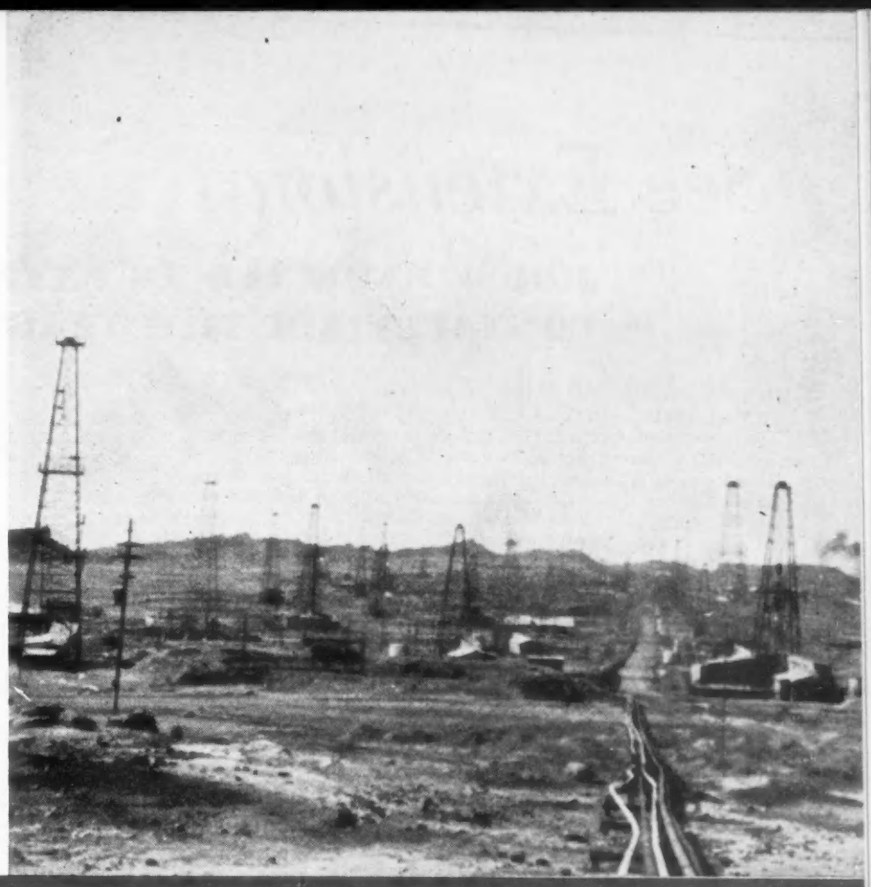
THIS WEEK

» IN THE PUNJAB, INDIA, Attock Oil Company's hopes for substantial production from Khaur field, shown here, rest mainly on commercial production from the deep limestones. High pressures in this old field, discovered in 1914, show little signs of abating. Khaur is still producing from the original shallow sand at 500 feet, although the company's efforts to develop worthwhile production in the 1600-foot sand last year did not result profitably.



AFTER three days of hearings on the Connally Contraband Oil Act before a subcommittee of the House, it appears that this law may be extended for a period of two years, rather than permanently, as passed by the Senate. This change is expected to be the only one made in the bill. **Page 40.**

THE Supreme Court of Texas has held that the Railroad Commission may review any of the orders it has issued, and after a new hearing at which evidence is presented, may revise or modify its orders in any respect the commission members find advisable. This is an important decision that will affect all orders of the commission, and particularly permits for drilling wells in the state. **Page 41.**

GOVERNMENT records show that the wage scale prevailing in the oil industry is higher than in nearly all other industries. Moreover, that the wage scale has increased recently while hours worked were declining. As compared with coal, another mining industry, oil workers are far ahead in every consideration, including the steadiness of employment. **Page 44.**

IT APPEARS that there will be a close balance between crude production and market requirements during the month of May. The six leading producing states, which account for over 90 percent of the nation's oil output, have prescribed May allowables that conform fairly close to forecasts of market demands. Allowables of the six states exceed Bureau of Mines recommendations by the smallest amount during the year, with the exception of the month of April. **Page 42.**

THE year 1936 was by far the most active and successful one yet experienced by Western Kansas. During 1936, many important discoveries were made, including some that opened new trends and formations. There were 54 fields found in the year. Geological work was very active, with 3½ million acres being seismographed and a million acres core drilled. Likewise, there was much leasing, and at present major companies hold 5,800,000 acres of undeveloped acreage in the region. **Page 67.**

CURRENT SITUATION

(Latest Available Weekly Data)

Outlook.—Promising; prices trending higher.

Crude Market.—More talk of higher prices.

Refined Oil Markets. — Strong; prices above week ago.

Crude Production.—Continues at record proportions.

Crude Runs to Stills.—Up 70,000 barrels to new all-time peak.

Crude Stocks.—Up 94,000 barrels in week ended April 10; gain of 12,257,000 in 11 weeks.

Gasoline Stocks.—Down 400,000 barrels last week, with demand good.

Gas and Fuel Oil Stocks.—Down 372,000 barrels continuing decline.

Drilling.—Completions down 66 last week; total 525 wells.

See* MARKET SECTION *for Details

INCOMPLETE development in many fields in Western Kansas makes it difficult to estimate the amount of crude reserves in the region. There are 88 fields with less than six wells in each. Therefore, an estimate of 273,000,000 barrels, made by Marvin Lee in this issue, is considered very conservative. **Page 48.**

THE first commercial production in Western Kansas was found in 1923, and additional discoveries were few for several years thereafter. Since 1927, the region has consistently increased in magnitude, particularly during 1935 and 1936, when 87 new fields were discovered. **Page 50.**

COMPLETION of 180 wells in the Hugoton field of extreme southwestern Kansas, is estimated to have proven 2600 square miles productive of gas. This vast district is calculated to have a total volume of 16 trillion cubic feet of gas. Thus, Kansas has one of the nation's largest gas reserve areas. With the demand for gas increasing, Hugoton is experiencing a greater development campaign. **Page 56.**

See Extension

HOUSE EXPECTED TO EXTEND CONNALLY ACT TWO YEARS

Washington, D. C. — Extension of the Connally Contraband Oil Act for a period of two years from June 15 was foreseen in Washington this week, following three days' hearings on the extension bill by the Cole Subcommittee of the House Committee on Interstate and Foreign Commerce.

As passed by the Senate in March, the act would be made permanent law.

Views expressed by members of the subcommittee during the hearings indicated that the bill would be reported to the full committee without other changes, despite appeals for provisions calling for return of the NRA labor provisions and a demand for disintegration of the major companies.

Features of the hearings were the admission by Secretary of the Interior Harold L. Ickes that the situation now is so satisfactory that he sees no need for federal control, and a declaration by Colonel Ernest O. Thompson, of the Texas Railroad Commission, that Texas was determined to go ahead with its conservation law regardless of whether the Connally act is extended.

Possible reconsideration of the import taxes by the House Ways and Means Committee, with a view toward lowering the rates, was seen in expressions of Representative Pettengill of Indiana that there should be no bar to the free entry of foreign oil if conservation was the primary objective of the state and federal legislation.

Government to Supply Machinery

Appearing before the subcommittee as sponsor in the House of a bill identical with that of Senator Connally, Congressman Martin Dies of Texas explained that the purpose of the legislation is not to give the government the power to regulate prices or control production but to provide the final machinery necessary to make state control successful.

"It has been demonstrated successfully that when oil is produced in a disorderly, haphazard manner without any restriction, the maximum recovery is about 50 percent," he said, "and while the price may be much cheaper than under orderly production, it is a known fact that ultimately it will be prohibitive."

Ickes Reverses Position

A total reversal of his former position on Federal control was admitted by Secretary of the Interior Harold L. Ickes, who told the subcommittee that the states have gone so much further than anticipated in their recognition of the need for conservation that he no longer feels Federal control of the industry necessary.

Submitting a prepared statement before responding to questions from subcommittee members, Ickes declared that during most of the period in which the Connally act has been in operation, the smaller and non-integrated refiners have been able to operate at a profit. Retail gasoline price wars have been infrequent and of limited extent, yet, he pointed out, there has been no material increase in retail prices.

"The oil industry, along with the nation, has recovered from the depressing conditions of 1933 and 1934 to such an extent that the emergency stabilization measures no longer press for attention," he said. "On the other hand, the increasing demand for petroleum products and the mounting production have emphasized the need for conservation.

Wants Production Divorced

Leading the questioning was Representative Carl E. Mapes of Michigan, who sought to secure from Ickes an admission that there should be a divorce of production from marketing.

The secretary pointed out, however, that in the first place the question of disintegration was not affected in any way by the Connally act and, secondly, divorce was an economic question. However, he added, the department has received fewer complaints from independents seeking relief since enactment of the contraband oil law, and the independent group now is believed to be making money. Uncontrolled production, he explained, always has left the independent operator at the mercy of cut-throat competition which the integrated company, with its better financial set-up and organization, has been able to withstand.

Import Discussion Declined

Reflecting the marketers' demand for abandonment of the import taxes, Congressman Charles A. Wolverton of New Jersey bombarded the interior department head with questions as to the desirability of encouraging imports as a means of conserving our own resources, but elicited no opinion from the secretary, who said he would be glad to discuss that matter privately but not publicly. Either side of the import question may be supported by argument, he said, but refused to indicate his position.

"Import Taxes Too High"

Charging that the very fact that imports have not increased as oil prices rose indicates that the import taxes are too high, Representative Samuel B. Pettengill of Indiana who expressed the view that the import levies should be revised and also that the Connally act should not be made permanent, in view of the fact that there was no assurance that, if it were made permanent, the states, in an effort to force prices higher, would not limit production to below demand. His questions brought out the fact that the Texas law, which the act was passed to support, is not permanent and has but recently been extended for a two-year period.

Pettengill also explored the possibilities of providing safeguards against gouging in the act, but Secretary Ickes took the position that congress was always in a position to amend or repeal a law if it seemed necessary and declared that any legislation which might be enacted would have to have the Connally act as a basis.

Arguments Against Bill

The three major arguments of opponents of the bill, it was explained by Chairman William P. Code, Jr., of Maryland, are that it elminates an open market for consumer cooperatives' supply, gives the major companies a practically monopolistic market, and places the retail branch of the industry at a disadvantage.

The secretary pointed out that practically since the inception of the industry the distributors have complained against conditions, but declared that subject has no relation to the Connally act.

Chairman Cole also asked about the legal attacks on the law, in the light of the secretary's statement that the courts have unanimously held the act to be constitutional, although it has never come before the United States Supreme Court.

It was explained by Richard H. Hill, special assistant to the attorney general in charge of enforcement in the East Texas field, that the act has been attacked on practically every conceivable ground, including the charge that it was an undue delegation of power to the states and an undue delegation of power to the president. In every instance, he said, the law has been held constitutional, and while the supreme court has never passed on the statute, the government believes that a recent decision on prison-made goods is definitely applicable to the oil act.

Injects Labor Question

The labor question was injected into the hearings by Representative Lyle H. Boren of Oklahoma, who submitted an amendment to the bill to restore the labor provisions of the NRA oil code. His amendment provided that "no person, firm or corporation engaged in the drilling for, production of, or transportation of crude petroleum in interstate commerce shall employ or cause to be employed any worker for more than 40 hours in one week nor more than 72 hours in any two consecutive weeks nor more than 16 hours in any two consecutive days: provided further, that no person, firm or corporation engaged in the drilling for, production of, or transportation of crude petroleum in interstate commerce shall pay less than $5 per six hours for daily employment."

The proposed amendment was supported by Harvey B. Fremming, president of the International Association of Oil Field, Gas Well and Refinery Workers, who declared that the Connally act is "purely economic and no conservation" and that the latter end is only now becoming an important factor.

Nevertheless, he told the subcommittee, his organization is in favor of the statute, but believes it should be expended so as to provide for conserva-

tion of human effort as well as of oil.

Fremming declared that while the price of oil has been increasing the condition of labor has not been correspondingly improved. He indicated that only about 25 percent of the industry's labor would be affected by the amendment, which is intended to eliminate a small group of operators who are "chiseling" on their workers. On the whole, it was admitted, labor in the industry is satisfactorily treated, with the exception of those employed by a small group.

"Control Prevented Shortage"

Adoption of production controls, including the Connally act, has served to prevent a world-wide shortage of oil which would have occurred had the Texas fields been permitted to produce without restriction during the last five years, it was declared April 28 by Ernest O. Thompson of the Texas Railroad Commission.

"The Connally act has been of great assistance to the state of Texas in preventing the movement in interstate commerce of any oil or products produced in violation of the laws or orders of the state of Texas or its regulatory body," he told the subcommittee.

Meeting the argument presented the preceding day by Representative Pettengill that the act should be continued only for two years in view of the fact that the Texas statute is merely temporary, the commissioner explained that "the present state of the science of petroleum engineering is not so far advanced that we can lay down axioms. It is new and is constantly going through trial by experience.

Prefer to Delay Legislation

"We in Texas, the biggest oil producing state, preferred to test the operation of this law for another experimental period of at least two years before enacting permanent legislation on the subject. We do not yet know just exactly where it is leading or just what statutory standard we should properly set up in the law which would control the greatest industry within our state.

"It's all right with me to make it (the Connally act) temporary," he added.

"Contented Indifference"

"The oil industry today is in what I choose to term a state of contented indifference. There is no chaos.

"There is a firm demand for crude. There is a good, fair price in effect for crude and the consumer is getting a constantly improved product for a reasonable price.

"We have not had one complaint from the operators of the East Texas field in the last eight months. They have learned we are helping them to extend the flowing life of that field and thereby enlarge the ultimate yield."

The state's control effort, Thompson explained in response to questions by Chairman Cole, has been directed entirely toward conservation and has not been influenced by increasing demand. "We are not crowding any field in order to make up demand," he said. "We are producing only about 16 percent of our potential."

Under questioning by Chairman Cole, Thompson declared there was more oil

[*Continued on Page 146*]

Important Decision

COURT RULES COMMISSION MAY REVISE ITS ORDERS

Austin.—An important decision affecting permits to drill wells in Texas, and all orders of the Railroad Commission, was handed down last week by the Supreme Court in the "New Process Case."

The effect of the decision is to allow the Railroad Commission to review any of the orders it has issued, and after a new hearing at which evidence is presented, revise or modify these orders in any respect the commission finds advisable.

In an extended opinion, the court said in part:

"1. That the commission acts as a quasi judicial body in the matter of ascertaining and finding the fact preliminary to the marking of an order refusing an application to drill an oil well as an exception to Rule 37.

"2. That the commission has power to issue and cause process to be served to enter orders that are final unless set aside on appeal and to enforce its judgments which govern valuable property rights.

Must Hold Hearing

"3. That the order dated May 7, 1934, denying a permit to drill the three additional wells was a final order, and the commission's further jurisdiction could not be invoked except upon motion, notice and hearing which was not had when the order of June 29, 1934.

"4. That the purported order of June 29 was a void order because it had been entered without motion, notice and hearing.

"5. That the three wells operated under authority of the void order were illegally operated.

"6. That since they were illegal wells, the operation should be enjoined.

. . . "We note that the opinion contains the statement that the Court of Civil appeals correctly decided the other questions presented. The Court of Civil Appeals, after making rulings in substance the same as those made by this court, went further and held that the evidence was not sufficient to show that New Process was entitled to drill and operate the three wells allowed by the order of June 29. It is our opinion that since no motion, notice or hearing was had prior to the entry of the order, the commission was without jurisdiction to determine any issue of fact. Of course, if the commission did not have jurisdiction, the courts obtained none by appeal. We mention this to show that by our former opinion we did not really pass on the question as to whether the facts presented district court showed a meritorious case for New Process.

"It is evident that the order of May 7 was never appealed from and therefore never became operative as a judgment of this or any other court. It is true that we held that such order was a final order, but we only passed thereon, incidentally in determining the validity of the order of June 29, 1934. This last mentioned order was the one brought before us for review by appeal from the orders of the commission. From all that has been said it is evident that we hold that the order of the commission of March 1, 1937, was not entered in violation of any order or judgment of this court. This ruling alone would result in the dismissal of this application for want of jurisdiction to grant the relief prayed for.

Cannot Nullify Court Order

"If we properly interpret the briefs and arguments of counsel for relators, they contend that since the order of May 7 was held by this court to be a final order, the commission is without power to alter or change it, because an administrative body cannot set aside or nullify the judgment of a court of competent jurisdiction. We think we have already determined this question adversely to relators' contention.

Can Review All Orders

"If we further properly interpret relators' briefs, they contend that when the commission once has a proper and lawful hearing on an application to drill as an exception, and such order of refusal is not appealed from, it becomes final in the sense that the commission is without jurisdiction to thereafter reconsider unless there is a showing of changed conditions . . . After a careful study of the pertinent statutes and the rulings of the commission on the question for years, we have reached the conclusion that it ought to be held that the right of review, in spite of the absence of changed conditions, should be upheld.

SIGNS COMPACT BILL

Texas joins compacting states for two years

Austin.—The Interstate Oil Compact bill extending for two years Texas' right to participate in the compact has been signed by Governor Allred.

Senator Weaver Moore of Houston has attempted to have a resolution passed which would give the governor the power to withdraw from the compact should Texas receive less than her proportionate share of the allowable distributed between the various states.

Since the Compact Commission makes no attempt to divide allocations, nor has it the power to do so, the purpose of the resolution seemed to be of political significance alone.